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COMPUTERWORLD

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Ancient systems put scare in air

By Gary H. Anthes
WASHINGTON

Recent disasters have trained a harsh spotlight on air safety and its patron, the Federal Aviation Administration. But the beleaguered FAA is sitting on another ticking bomb: an aging air traffic control system that some say is "on the ragged edge" of acceptable safety.

Many aviation experts cite an elaborate system of automated and manual backups as evidence that the nation's air traffic control system is safe. But critics point to a growing number of failures among decades-old computer systems and flaws in the backup systems as signs that safety is deteriorating.

"The system is basically broke; it's not as safe as it could be, should be or was," said Robert Charette, a computer risk specialist and president of ITABI Corp. in Fairfax, Va. "Earlier, we would have been very unlucky to have an accident caused by these systems going out. Now, we're lucky if something doesn't happen."

"Our position is the system remains safe, but it definitely is

FAA, page 28

Cairo detoured

Microsoft recasts late NT upgrade as 'set of technologies'

Microsoft CEO Bill Gates *says Cairo will be primarily divided between Windows NT versions 4.0 and 5.0*

By Justin Hibbard
BELLEVUE, WASH.

Operating systems

Executives at Microsoft Corp. are speaking in riddles about Cairo again. But the word play may signal a more manageable upgrade process for users.

At the company's financial analysts meeting last week, CEO Bill Gates and two top managers said publicly for the first time that the company's long-awaited object-oriented operating system — code-named Cairo — isn't a product, but a set of technologies, if not a "vision."

According to analysts, the switch is part of Microsoft's plan to move toward an "annuity" upgrade model rather than rolling out all-in-one upgrade packages, such as Windows 95. In an annuity model, users subscribe to an online update service and download new features as they become available.

According to Jesse Berst, founding editor of "Windows Watcher," a newsletter in Redmond, Wash., who

Cairo detoured, *page 93*

Eyes on the enter-prize

Vague bid to open OLE elicits skepticism

By Frank Hayes

As Microsoft Corp. moves to surrender sole control of its key object technologies, some corporate developers wonder whether the software Goliath can become open enough to support true enterprise-level applications.

Openness is no academic concern for developers trying to build enterprise-level applications. They need tools that will link user PCs with distributed client/server systems and legacy mainframe applications. For that, multiplatform standards are crucial: If it won't connect, the system is wrecked.

But Microsoft, which has been locked out of those giant applications because its technology is viewed by many users as proprietary, seems baffled about how to loosen its grip on ActiveX and OLE. In separate announcements since

OLE, *page 93*

T. Rowe Price's Timothy M. Tully *says he is wary of Microsoft's motives regarding open systems*

WHAT'S INSIDE

- Users increasingly turn to help desk outsourcers. **See stories, page 8,** *by April Jacobs and Julio King.*
- Internet laggard IBM struggles to catch up. **See stories, page 12,** *by Michael Goldberg and Craig Stedman.*
- Multiprocessor Macintoshes and the PowerPC take Macworld Expo stage. **See stories, page 14,** *by Lisa Picarille and Bob Francis.*

Switch, hub makers woo ISP market

By Bob Wallace

To boost slowing revenue, internetworking vendors are trying to bust in to the Internet service provider equipment business — a strategy switch that could translate into less downtime and more reliable links to the Internet for users.

But first, internetworking vendors and Internet providers must transcend the main obstacles to a quick and potentially lucrative marriage: limited cash, a dearth of engineering talent and inefficient In-

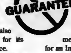
Switch makers, *page 16*

'net performance vow falls short

By Mitch Wagner

Be sure to read the fine print on performance commitments offered by Internet service provider ANS, a unit of America Online, Inc.

ANS, one of the largest providers in the country, recently announced a plan under which it would commit to make its Internet-based virtual private network service available 99.5% of the time. The company also committed to 99.5% availability for its World Wide Web site hosting service.



But the commitments have lots of qualifications and hedges. They are so limited that the company won't even pledge that a Web site hosted by ANS will be accessible from user accounts at America Online. Vimal Solanki, a product marketing manager at ANS, explained that America Online leases dial-up connectivity from networking companies besides ANS. That puts parts of the America Online network outside of ANS' control.

ANS won't even refer to the commitments as a "guarantee" — a word that ANS officials said implies more control than ANS actually promises.

But as limited as the ANS commitments are, they are a pioneering effort for an Internet service provider, according to analysts.

ANS is offering, in writing, cash penalties if it fails to meet explicitly stated performance

'net performance, *page 58*

No downtime

With the dog days of summer here, you'd think there would be a lot less to worry about. There should be so little going on in the computer industry that IS pros could just take the month off and relax, right?

No such luck. Somebody needs to hop out of the lawn chair and worry about Microsoft.

Consider what a total dither the company is in these days, as Bill Gates and his frazzled executives race to redirect the desktop behemoth (see our lead stories, page 1).

One week, the company says it will hand off its key object technologies to an imaginary standards body. Then last week, Microsoft's top executives casually revealed that their fabled Cairo operating system is no longer a product. Now, it's a "series of technologies" to be released over time as components to enhance NT.

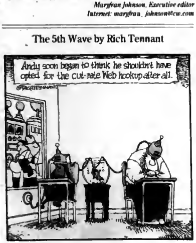
First, let's worry about how you hand over precious — but proprietary — object technologies to an organization that doesn't exist. If you're Microsoft, you declare your plan to host a big meeting and gather advice from users and other vendors. You ask your invited guests: Should Microsoft create its own standards organization to safeguard its valuable technologies? Or should it turn them over to an existing ragtag standards group, which God knows will be full of Unix geeks anyway? As of late last week, Microsoft was still changing its plans for this meeting. It got to the point where reporters were calling one another to swap stories about how many different versions they'd heard. So somebody should worry if this meeting will ever get scheduled.

And the desktop giant isn't having much luck these days when it comes to showing off. Our story on page 6 details the rather inauspicious launch of Wal-Mart's cyberspace store, which suffered from user access that was so slow one analyst quipped, "It looks like this is running on a 14.4 [K bit/sec.] line out of Wal-Mart's basement." Was it only six months ago that Gates and Wal-Mart CEO David Glass were holding forth in the press about how Wal-Mart would become a showcase prototype for Microsoft technologies in online commerce?

Attention shoppers: There may be something to worry about.

Maryfran Johnson, Executive editor
Internet: maryfran_johnson@cw.com

The 5th Wave by Rich Tennant


Andy soon began to think he shouldn't have opted for the cut-rate Web hookup after all.
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IBM, Apple rev up OpenDoc

By Sharon Gaudin

IBM and Apple Computer, Inc. late last week teamed up with Component Integration Laboratories and the Object Management Group to push a series of OpenDoc-related announcements on the eve of this week's Macworld Expo and Object Expo.

The announcement was prompted by recent criticism that OpenDoc has lost any momentum it once had. Executives from the four firms touted OpenDoc-based components, version updates and increased group memberships.

Anthony Brown, manager of object technologies marketing at IBM's Software Solutions Division, tried to spotlight OpenDoc's progress in the past eight months and flag components and partnerships that are on the way.

OpenDoc is an industry-standard architecture for plugging together software components to make distributed applications. Its main rival is Microsoft Corp.'s OLE (see story, page 1).

Components on the way

Third-party vendors will release 30 beta components for OpenDoc's OS/2-based architecture by fall, according to John Slitz, vice president of application development and object technologies marketing at IBM. Brown said the latest round of releases will include components that add speech capabilities to OpenDoc applications and charting and calendaring features.

IBM just a week ago announced it had two packages of components available on its Club OpenDoc Internet site (www.software.ibm.com/clubopendoc).

Slitz also noted that OpenDoc for Windows, which went into beta testing this summer, will go into a second testing phase this month.

Also, an enhancement for OpenDoc for the Mac OS code, which was first released last November, is shipping, said Gina Centoal, product line manager at Apple. She said 16 products from third-party vendors, which are based on OpenDoc for Mac OS, will debut at Macworld this week.

News Shorts

IRS downsizing hits IS

The **Internal Revenue Service** last week said it will eliminate 5,000 jobs — including 1,500 in information systems — through layoffs, reassignments, early retirements and attrition. The IS cuts stem from congressional vows to reduce the agency's funding for IS from about $1.5 billion to about $1 billion next year. The cuts will come mostly from the IRS' beleaguered tax systems modernization program, but a spokesman said it is too early to say how that will be affected.

Bingaman resigns

Microsoft Corp. critic and Assistant Attorney General Anne E. Bingaman resigned as head of the U.S. Department of Justice's Antitrust Division, effective no later than Nov. 15. She was accused of being soft on Microsoft in her defense of an antitrust settlement seen by many as favorable to the software giant. She will return to private law practice, she said.

NEC denies dumping

Supercomputer maker **Cray Research, Inc.** last week filed a complaint alleging that Japan's **NEC Corp.** tentatively won a government contract by proposing to sell four systems at a $65 million loss. Officials at NEC denied the dumping charges.

Object, Java Expo opens

With object-oriented programming rapidly gaining momentum, this week's Object Expo in New York will target IS professionals looking to cash in on this new technology. Several vendors will announce object libraries, debuggers and Java tool sets. Show organizers also are launching the first Java Expo, which will be held in conjunction with Object Expo.

Lotus melds Notes, NT

Lotus Development Corp. last week revealed plans to tightly integrate Windows NT and Notes 4.5, the Notes upgrade due in September. The integration will ease administration by offering single sign-on, directory synchronization and a place to monitor performance of Windows NT and Notes.

New phone rules bow

The **Federal Communications Commission** last week released sweeping rules that will map out the future of local telephone competition. Analysts say the rules initially will provide an edge to long-distance carriers over local providers. But the long-distance carriers were disappointed that the FCC failed to address a key issue: whether to reduce the $25 billion per year they pay local companies to complete their long-distance calls.

AT&T, GTE cross wires

AT&T Corp.'s Wireless Data Division and **GTE Corp.** have agreed to jointly provide wireless data services to more than 65 million potential customers in 34 markets across the U.S. Starting in October, the pair will connect their wireless data networks, which will let corporate and individual customers send and receive data wirelessly within either firm's wireless data service area.

PC sales still rising

PC sales in the second quarter stayed on an upward path — sales increased 16.5% over the same quarter a year ago, according to **Dataquest**, a research group in San Jose, Calif. **Compaq Computer Corp.** is still the worldwide leader in PC sales. **IBM** held on to second place. **Apple Computer, Inc.** remained in third.

SHORT TAKES In a boost for **3Com Corp.**, **IBM** last week announced it will resell 3Com's Ethernet, Fast Ethernet and Asynchronous Transfer Mode switching modules. Users can get one-stop 8260 hub and switching modules shopping from IBM.... **Computer Sciences Corp.** was awarded a three-year, $11 million outsourcing contract to provide information technology services to **L. A. Care Health Plan**.... The **Open Group** and **Open User Recommended Solutions** have agreed to work together in their respective task forces and working groups. Struggling PC maker **AST Research, Inc.** last week revealed losses of $98.7 million on revenue of $538.8 million in the second quarter. This is the company's ninth consecutive quarterly loss.

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Inside Computerworld

Aug. 5, 1996

News

NEWS

OPINION

This week in COMPUTERWORLD

QuickPoll
Year 2000: It's not just for mainframes anymore – not by a longshot. Take our poll and see where you stack up on the issues.

Forum
It's been almost a year since CA's bitter buyout of Legent. Have things cooled down? See our forum.

www.computerworld.com

Choice Cuts

Monticello Memoirs
Industry giants, including Seymour Cray, discuss the past and future.
See In Depth, page 67.

It's gonna cost you
Suddenly in high demand and low supply, AS/400 talent is commanding record-high salaries.
See Careers, page 71.

Technical Sections

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SOFTWARE

THE ENTERPRISE NETWORK

THE INTERNET

CORPORATE STRATEGIES

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Opening-day jitters hit Wal-Mart site

By Mitch Wagner

The grand opening of the Wal-Mart store in cyberspace had some glitches last week thet caused slow service for customers.

The World Wide Web site for Wal-Mart Stores, Inc. (www.wal-mart.com) was plagued by mundane Internet problems that included insufficient server power, software errors and insufficient throughput on Wal-Mart's Internet connection.

The server slowed to a crawl as it was assailed by 1 million hits on the online store's first day.

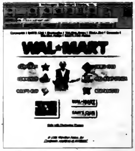
"I'm not impressed. I don't think thia is good for business," said Scott Smith, an analyst at Jupiter Communications LLC in New York. "It looks like this is running on a 14.4[K bit/sec.] line out of Wal-Mart's basement."

That is an inauspicious beginning for a site that Microsoft Corp. had touted as an upcoming standard-bearer for retail sales on the Internet. Last February, Microsoft CEO Bill Gates and Wal-Mart CEO David Glass announced that the two companies would jointly develop online commerce technologies. Microsoft said it would use Wal-Mart as a prototype for technologies it would remarket to other retailers.

Shared space

Problems started for Wal-Mart when the Web page opened for business Tuesday. The site shared a Hewlett-Packard Co. server with other applications, and access was through a single T1 line from AT&T Corp. that was shared with several other companies.

By comparison, other popular sites on the Web, such as Yahoo and Netscape Communications Corp.'s home page, typically run on several dedicated servers and have multiple T1 lines dedicated to their use.



Information systems managers at Wal-Mart, based in Bentonville, Ark., worked until 1 s.m. Thursday moving the Web software and data to its own server and obtaining a dedicated T1 line from AT&T. The site was slightly faster on Thursday. Wal-Mart expects a larger server to be shipped from HP this week, said Phil Martz, director of Wal-Mart's online service.

Wal-Mart is sanguine about the experience. "We're awfully pleased, actually," Martz said. "We've got a door that's only so large, and we've got hundreds of people trying to get through it."

Microsoft agreed. "They're working right now on tuning the site," said Mike Nash, group product manager.

Once the bugs are worked out, Wal-Mart officials said they hope the online store will sell more upscale items than those sold in the real-world stores.

"Historically, if we put a $59.95 Krups coffeemaker next to a $19.95 Mr. Coffee in our stores, our customers vote for the Mr. Coffee, and we have to take the Krups coffeemaker off the shelves," Martz said. "Square footage isn't an issue online."

VAX's last hurrah?

Digital readies uniprocessor upgrade

By Jaikumar Vijayan

There will be at least one more VAX before the sun sets on this key player in minicomputer history.

Minicomputers

Digital Equipment Corp. in Maynard, Mass., is prepping what some observers say may be the company's last significant VAX product opgrade announcement. The uniprocessor product, code-named Catamount, is expected to ship in the fall. It will take its place between the VAX 4000 and the VAX 7000 series.

The VAX line is one of the earliest and most-enduring legacies of Digital's proprietary minicomputer past. The product was first shipped in 1978. Analysts estimate that about 400,000 units have been installed since then. The vast number of them ran mission-critical applications in manufacturing, engineering, scientific and educational institutions.

"I think it is going to be the VAX's last hurrah," said Terry Shannon, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass. "But given that a significant proportion of the VAX base has already migrated [to other platforms], I doubt it will create any undue level of angst."

Not dead yet

Digital last week confirmed that it is prepping a VAX upgrade for later this year, but a spokeswoman emphatically denied that it will be an end-of-life product.

"As long as there are people out there who still use these products, Digital will continue to support them," the spokeswoman said.

But users are reading a different sort of writing on the wall.

"I'm not going to be surprised at all if they start backing away from the VAX," said Rob Young, a software engineer at Vu/Text Library Services, Inc. in Philadelphia.

"They have carried it for a long time, and they are at a point where they are probably saying, 'We can't keep having new spins to this every four months or so,'" he said.

"We are going to be doing the last software upgrade to our VAX platform pretty soon," said David J. Foss, group leader of information technology at ICI Paints Co. in Strongsville, Ohio.

The company eventually will move to a Windows-based environment, and the hardware of choice is likely to be Alpha servers, he said.

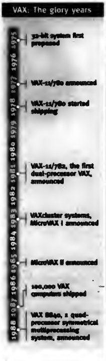
Digital's newest VAX will feature up to 512M bytes of memory and larger I/O bandwidth and disk capacity than the VAX 4000 server series.

"It will support different speed processors and can be made to emulate either a VAX 4000 or a VAX 7000, depending on what silicon you stick into it," Shannon said.

The VAX has faded in importance since the early 1990s, when Digital focused its developmental and marketing dollars on its open, highly scalable Alpha server architecture.

"The total VAX contribution to Digital's total revenue is probably around 5% today. It's not a mainstream effort" for the company any longer, said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

VAX: The glory years


1975
32-bit system first proposed
1976
1977
VAX-11/780 announced
1978
VAX-11/780 started shipping
1979
1980
1981
VAX-11/782, the first dual-processor VAX, announced
1982
1983
VAXcluster systems, MicroVAX I announced
1984
1985
MicroVAX II announced
1986
1987
100,000 VAX computers shipped
1988
VAX 8840, a quad-processor symmetrical multiprocessing system, announced

3-D model helps swing GOP vote to San Diego

By Stewart Deck

Forty-eight building columns stood in the way of San Diego winning the bid to host this month's Republican National Convention.

But city officials clinched the deal using a three-dimensional computer model that convinced skeptical GOP leaders that the city's convention center could do the job.

When Republican party officials were scoping out different convention venues two years ago, they were concerned about the San Diego Convention Center because it had 48 structural columns that could block the sight lines for 20,000 GOP convention-goers, recalled Tim Fitzpatrick, deputy press secretary for the Republican National Convention.

The city had just one month to come up with a convincing seating plan or else the Republicans would take their estimated $162 million convention elsewhere. So San Diego turned its problem over to Coryphaeus Software, Inc., a Los Gatos, Calif.-based developer of real-time, 3-D modeling software.

Safety first

The U.S. Secret Service used the 3-D computer model for security planning, viewing elevations, exits and sight lines.

Jayne Capelin, a graphic artist at Coryphaeus, immersed herself in architectural blueprints, digital engineering files and scanned photographs of the convention center. For additional realistic touches, she scanned in the stage, podium and banners from past conventions.

Using Coryphaeus' Designers Workbench, Capelin assembled all of these elements and built an interactive 3-D digital replica of the convention center — in two weeks — for Republican committee members to tour.

"We were able to show the committee the exact views of the podium from anywhere in the hall, including the worst seat and the best seat in the house," said T. J. Murray, vice president of marketing at San Diego Dats Processing Corp., the city agency that commissioned the model.

Using the digital model, committee members could walk through the hall, sit in any seat and see if those troublesome columns were in anyone's way.

Building designers also discovered that their original plans for television network booths hung too low for anchormen to see the speaker's podium, so the booths were raised.

Then the broadcast networks used the model to find places for extra cameras.' And where did they end up placing them? They went around the columns that caused all the trouble in the first place.

"Using the 3-D model, we were able to show thet the columns were an asset to the hall, not a liability," Murray said.

WHEN YOUR CENTURY-DATE-CHANGE
PROBLEM BECOMES BIG ENOUGH,
GIVE US A CALL.

Outsourced help desks ease staffing crunches

By April Jacobs

The lure of high-quality service on demand is drawing a growing number of companies into the world of help desk outsourcing.

By relying on large multivendor databases, help desk outsourcers say they can save companies from adding staff as their computing operations become more complex.

Although only 15% of companies outsource any help desk services, analysts at Gartner Group, Inc. predict that number will grow to 40% by 1998. The customer information services market, which includes help desk software and professional services, will grow from $1.95 billion this year to $2.76 billion next year, according to Aberdeen Group, Inc. in Boston.

For Joho Crane International, Inc. in Morton Grove, Ill., outsourcing was the best option for supporting some 700 to 800 mobile users. "Our MIS department here is too small to provide round-the-clock service," said Desta Elliott, an internal consultant at Crane.

Other company systems remain under the care of the inhouse information systems department, she added.

No personal touch

But the downside of help desk outsourcing is that a voice over the telephone can't always replace a personal visit to a user's desk. So handing over systems problems to a third party doesn't always solve them.

And outsourcing support doesn't necessarily cost less: companies need to keep close tabs on the outsourcer, said Colleen McCormick, a research analyst at Gartner Group in Stamford, Conn.

Outsourcing costs vary, but charges on a per-call basis generally range from $2 to $4 per minute, or $8.50 to $36 per user per month.

One potential nightmare of outsourcing is that a company might lose control of its help desk, leaving its IS staff out of touch with system problems, McCormick said.

"The successful outsourcing stories I've heard have been those where the internal group manages the outsourcer," she said.

Pharmaceutical manufacturer Wyeth-Ayerst Laboratories, Inc. outsources repair of computer equipment and support for its shrink-wrapped desktop applications such as Microsoft Corp.'s Word.

But Wyeth-Ayerst keeps a tight rein on both, said Lou Iozzi, associate director of client services at the St. Davids, Pa., company. Users call a main number and choose from a menu that drills down to their particular problems. If it is Microsoft Word, for example, the call is forwarded to Stream International, Inc., which charges Wyeth $22 per call, Iozzi said.

No warm bodies

"This was a quick way to make that help available to clients," he said. He noted that the downside is a lack of the in-person contact that some users need.

To provide service for a broad range of hardware and software, help desk companies tap in to a virtual network of experts with different areas of expertise. They also use knowledge pack software, which provides answers to many potential problems for specific software applications.

Ed Griffiths, national director of help desk services at XLConnect in Exton, Pa., uses Software Artistry, Inc.'s help desk software to provide support.

Companies are increasingly turning to outsourcers, he said, because they don't have the knowledge base to support products from multiple vendors. And although help desk services are essential to most companies, "this is not where they make their money," Griffiths added.

Help desk outsourcing tips

Do

- **Make sure the outsourcer can provide you with audit trails and reports.**
- **Find ways to measure how much your clients will use the software you intend to outsource.**
- **Make sure the guidelines are clear about how the outsourcer will resolve problems.**

Don't

- **Allow an outsourcer to take over before it is familiar with your corporate culture and the skill level of your employees.**
- **Rely on an outsourcer to solve all your systems problems.**
- **Jump into a contract for services without a plan in place to change that contract if things don't work out.**

HELP!

The technical experts who man the help desk at Decision One field nearly 250,000 calls per month. Here is a sampling – honest – of some of the crazier requests they have received:

CAMPBELL LAIRD

"I cleaned my keyboard, and now it doesn't work." *Next time, don't immerse it in a bathtub.*

"Help! The software won't work." *Try unwrapping it and installing it in your computer.*

"My computer won't fax." *No, you don't fax from your computer by placing the paper in front of the monitor screen.*

"What time does the Internet close? And please remember, I'm on West Coast time."

"My screen keeps telling me to hit any key, and I can't find the key labeled 'any.'"

Steady tone is key to customer support

End-user support

By Julia King

FRAZER, PA.

The caller on the other end of Mike Taylor's padded headset wants to know how he can electronically check his account balances at a New Jersey branch of Commerce Bank.

Never mind that the caller hasn't plugged in his modem. Taylor walks him through the installation, then gives the customer his name and telephone extension — just in case he has any problems once he dials in to Commerce's online banking service.

Several rows of cubicles from Taylor, Errol McIntosh is speaking calmly and firmly to a caller who is getting a "serious disk error" message on her PC. She is calling from a large pharmaceutical company several hundred miles away.

McIntosh speaks with the steady authority of an air traffic controller guiding an inexperienced flier down from 30,000 feet.

"Now, what we're going to do . . . OK, now go to the document and name it something else so we can save it." Throughout the 20-minute call, McIntosh consistently refers to the caller's dilemma as "our" problem and talks about how "we're" going to fix it.

Until the end of their shifts, Taylor and McIntosh will field dozens of such calls from users at companies that include Pillsbury Corp. in Minneapolis and AMP, Inc. in Harrisburg, Pa. Each company has outsourced its internal help desk operations to Decision One Corp. The company's 225-person support staff handles 225,000 calls per month.

Between calls or during the slowest periods — Saturdays and Sundays between 11 p.m. and 7 a.m. — Taylor might be found reading Tom Clancy's *Debt of Honor* or any one of several technology trade magazines stacked neatly on one corner of his desk.

Like McIntosh, he gets to surf the Internet for free. That is a favorite perk with staffers, many of whom started out their careers on a much different path.

Taylor, for instance, was a paramedic. He was studying for a degree in emergency medical management but is now pursuing one in multimedia instructional technologies.

Chuck Adams, another support staffer, was a supermarket clerk.

Such diversity is common in the help desk business because "a service-oriented personality is much more important than technical skills," said Don Edwards, operations director for end-user and software support.

"It's much easier to teach staffers the technical part of the job than the customer-service piece," he said.

Corrections

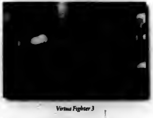
The article "Review: Leading 28.8K notebook modems pass muster" [CW, July 8] should have reported that the Microcom, Inc. TravelCard 28.8 modem is flash-ROM upgradable.

The job titles for Ed Coleman and John Mullin were incorrect in the caption for the photo accompanying the article "Georgia Tech's campus network goes for the gold" [CW, July 8]. Coleman is senior administrator of planning and programs in the information technology office; Mullin is director of operations and engineering.

Due to a reporting error, "Microsoft draws bead on IS with Visual C++" [CW, July 8] incorrectly stated that Chris Kwiecinski at Nabisco, Inc. oversees the company's 250 developers.

Due to a reporting error, "Project management goes enterprisewide" [CW, July 15] incorrectly identified Computer Sciences Corp., Artemis Products & Services in Fairfax, Va., as Lucas Management Systems.

gives Sega the winners.



Virtua Fighter 3

Honeywell the control.

TotalPlant Solution System

Data General the command.

CLARiiON Disk Array System

PowerPC *More and more, the world's top companies are depending on the high performance of PowerPC technology to develop their newest, most innovative products. It's a momentum that's changing computing forever. And it's why Sega, the world's number one computer game company, uses the advanced multimedia capabilities of PowerPC architecture. With it, their highly anticipated Virtua Fighter® 3 arcade game will have unprecedented lifelike characters and 3-D graphics. It's also why Honeywell uses PowerPC microprocessor-based systems running the Windows NT™ operating system for their new TotalPlant® Solution System for industrial automation. And PowerPC microprocessors give Data General the performance they need for their industry-leading CLARiiON® disk array mass storage systems. Call 1-800-845-MOTO, ext. CW, or visit http://www.mot.com/PowerPC/ to find out how PowerPC technology can give life to your most innovative product ideas.*

MOTOROLA

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New class of tools monitors network pulse

By Patrick Dryden

A new breed of network management software simplifies device and performance monitoring to warn administrators about impending problems.

The software includes tools coming next month from Kaspia Systems, Inc., a start-up in Beaverton, Ore., and others released by 3DV Technology, Inc. in Nashua, N.H.

They track standard statistics from internetworking gear to create status reports. Those reports let administrators know where to point more sophisticated real-time monitors for preventive maintenance.

"We don't have the staff to interpret the plethora of information provided by all the tools. We want to get an early warning and summation, so we don't go down blind alleys searching for problems," said Steve Tindall, project manager at Baxter Healthcare Corp. in Deerfield, Ill.

Such tools can supplant homegrown scripts and utilities that monitor performance by reading Management Information Base (MIB) data from routers, switches and hubs. And they reduce the cost and complexity of Remote Monitoring (Rmon) instrumentation.

"This could put us more in control by using management data already captured, as opposed to adding another layer of [Rmon] products," said Lawrence van Goethem, director of corporate telecommunications at Sara Lee Corp. in Chicago.

Dueling tools

Vendor	Function
3DV Technology Nashua, N.H. www.dddv.com **Product:** Network-PM **Price:** $2,495	Collects MIB data from any SNMP-manageable device to track traffic patterns and warn of potential problems
Kaspia Systems Beaverton, Ore. www.kaspia.com **Product:** Kaspia Monitoring System **Price:** Available Sept. 3	Collects data from up to 160 interfaces, MIB or Rmon probes, and agents to create Web-accessible reports

More powerful probes and analysis software provide complete reports on performance trends. Those are available from Rmon vendors such as Concord Communications, Inc. or Frontier Software Development, Inc. and from internetworking leaders such as 3Com Corp. and Bay Networks, Inc.

But start-ups are taking a different approach to meet the management market's demand for easier network monitoring, said Brian Burba, an analyst at International Data Corp. in Framingham, Mass.

"This type of product builds up an automated reporting facility to show where to start looking [for developing problems], so managers don't have to wait for a red alert," Burba said.

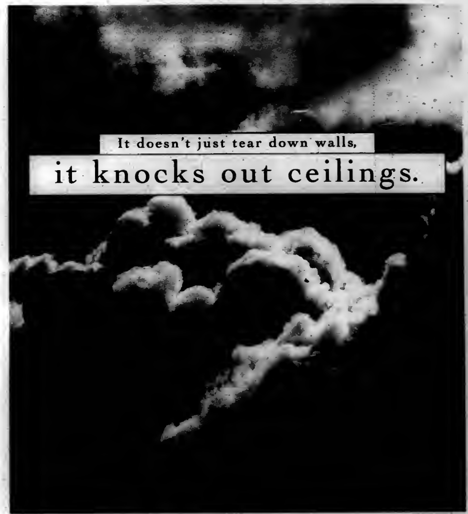
Functionality overkill

Most packages offer more functionality than users need, said Jim Ryan, network planner at the University of Massachusetts Medical Center in Worcester, Mass. "There are only a handful of critical factors you really watch. Beyond those, many products offer a lot of window dressing that we find we don't need," he said.

Administrators there and at organizations such as AlliedSignal, Inc. and Pacific Gas & Electric Co. said they create their own tools to track vital signs from MIBs.

Upcoming software from Kaspia Systems won't replace other management tools. They will just provide overnight analysis and present reports on network performance, said Kaspia President Jeff Irwin.

"We give the network manager a road map every morning that says which parts need attention, like unusually high utilization or other events," Irwin said. "It's a sophisticated smoke alarm."


It doesn't just tear down walls,
it knocks out ceilings.

IBM cozies up to the Web – finally

New software aims to get mainframers on the 'net

By Michael Goldberg
NEW ORLEANS

IBM will begin a rapid-fire series of software releases next month intended to get more System/390 mainframe users up on the Internet.

Users at the Share user group conference here last week said the faster IBM brings its mainframes in line with other Internet servers, the better.

"Making data available via the World Wide Web is one of the hottest things expressed to us by our department managers," said John Bevis, president of Share. Bevis also is manager of systems programming at the University of Florida in Gainesville.

Upcoming wares

By Sept. 30, IBM will unveil gateway software to let Web browsers access data from DB2 applications. It promises similar software for IMS applications by year's end (see chart).

The same capability for CICS applications will be part of a new CICS Transaction Server package for mainframes due next month, IBM officials said. That package will bundle CICS server, client and systems management software in a product that will cost less than the sum of its parts.

IBM also will release a new version of its Internet Connection Server for MVS that includes data encryption capabilities and support for Secure Sockets Layer and Secure Hypertext Transport Protocol for Internet transactions.

Using secure Internet standards "is a critical need for us," Bevis said. Mainframes represent a viable Web server to users who don't have Unix systems or who like mainframe security features and don't want to add an extra hardware layer, said Ed Carr, an analyst at Aberdeen Group, Inc. in Boston.

The Texas state comptroller's office in Austin is testing several upcoming IBM products as part of a proof-of-concept project to make mainframe data available via the Internet.

The first two test applications use an IBM RS/6000 Unix system as a Web server gateway to the mainframe, but the agency wants to cut out that middle machine.

"Our talent lies in the mainframe, and we don't have to reinvent the wheel there," said Stuart Greenfield, an analyst at the comptroller's office. But IBM must prove that hosting a Web server on the mainframe won't open up the agency's data to hackers, he said. "There's a lot of information here that [one wouldn't] want to make available."

Senior editor Craig Stedman contributed to this report.

System 390 enhancements due by year's end.

- OS/390 Release 2
- Internet BonusPak 2 for secure Internet transactions
- Upgraded TCP/IP software for MVS mainframes
- Web gateway for CICS, DB2 and IMS applications
- Full Unix compliance for OS/390
- Second generation of air-cooled CMOS processors

Fall announcements will pitch Web server role

By Craig Stedman
AUSTIN TEXAS

Stuck once again in catch-up mode, IBM this fall will make a series of announcements aimed at turning its RS/6000 Unix systems into more credible World Wide Web servers.

The highlight is the addition of three preconfigured systems that combine a clustered pair of RS/6000s with Netscape Communications Corp.'s Web server software.

The load-and-go packages are scheduled to ship late in the third quarter, IBM officials said at an RS/6000 briefing here last week.

Battle ahead

IBM also plans to introduce by year's end several add-on tools and other Internet-related software for the RS/6000 (see chart).

All this is an effort to get RS/6000s out of the also-ran category in the Unix Web server business, which is dominated by Sun Microsystems, Inc. and Silicon Graphics, Inc. (SGI).

But IBM faces an uphill climb, users and analysts said.

Like Hewlett-Packard Co. and Digital Equipment Corp., IBM has largely been a me-too Web server vendor, they said.

"IBM is not the first company that comes to mind when you think of the Internet," said Carl Howe, director of Web services at BBN Planet in Cambridge, Mass.

BBN uses a combination of Sun and SGI servers to run its Internet access and Web application hosting businesses.

But the clustered packages that IBM promises may hold some attraction because of their protection against hardware failures, Howe said.

HP announced a similar Web server cluster offering in the first quarter this year. IBM is the first of the other major Unix vendors to follow suit, said Jonathan Eunice, an analyst at Illuminata, Inc. in Nashua, N.H.

As customers start to run real business applications on the Internet or their intranets, being able to cluster servers so that one can pick up the slack if another crashes "really hits the nail on the head," he said.

Nonetheless, Eunice said HP and IBM lag so far behind in perception in the Web server market, they are essentially preaching to their installed bases.

"Sun and SGI have real cultural ties to the Web and give a lot of attention to it," he said. "For HP and IBM, it's third or fourth on the priority list, and that shows."

Headed for Web

WebSMIT – A Web browser version of its RS/6000-based systems management tool

IP Sprayer – Code name for a tool that spreads work across multiple Web servers

Software links – Between RS/6000 and Novell NetWare-based Web servers

Navigator Gold – Version of Netscape's browser with HTML authoring tools

Internet Video Server – Sends multimedia data over the Internet

Dazel to change delivery of Web info

By Patrick Dryden

Dazel Corp. last week disclosed technology that could change how intranets and the World Wide Web deliver information, analysts said.

Plans to extend its output management software will let users on enterprise networks direct documents to Web pages, printers and fax machines.

Information delivery

For example, instead of searching an intranet for desired documents, users could build a profile on Dazel's MetaWeb server by specifying the types of memos, reports and other data they want. The applications that generate that information would post their output on the MetaWeb server and notify users that they could access it through a personal home page.

Publishers also could use the product to send targeted information to select customers across the Internet.

"This is potential dynamite because it permits a publish-and-subscribe model that doesn't exist yet for Web users," said Paul Mason, director of the enterprise systems management program at International Data Corp. in Framingham, Mass.

Attempts to make applets look for desired information provide only "crude vacuum cleaners that search for any kind of a match," Mason said. "Dazel's MetaWeb lets users decide what they want, then organizes a response."

Austin, Texas-based Dazel will demonstrate MetaWeb the week of Aug. 26 at SAP AG's North American user group meeting in Philadelphia. Customer testing begins in November, but products won't be ready until next April for Unix servers and next June for Windows NT, Dazel officials said.

"If used widely, this software would transform the way the Web delivers information," said Sue Aldrich, senior consultant at Patricia Seybold Group in Boston. "Users can gain control over the electronic output that heads their way by selecting just what they want and getting updates when they happen."

The plans suit Clarke Knorr, design manager for product data management systems at Nortel, Inc., who wants to shift users in manufacturing plants to intranet applications.

"Dazel will give users on PC, Mac and Unix stations the same visibility of the stock lists, engineering changes and CAD files they process," Knorr said. They can direct such output to printers, fax machines, file storage and an intranet server, he said.

How to Dazel

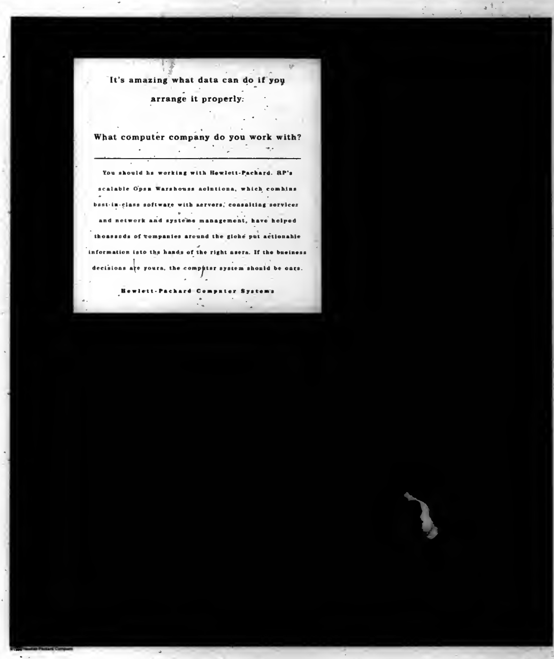
Dazel's software will add Web publishing and subscription capabilities to its output manager for mixed networks. Here's how it works:

Accounting department runs a SAP R/3 application and directs output of a sales report to printers, fax machines and users defined on MetaWeb

The Output Server transforms the sales report to various printer-control languages, HTML and fax format and delivers the report

Copies appear on printers throughout the network and on fax machines

Sales managers are notified by E-mail, pager or browser that the report is available



PowerPC trio aims for 600-MHz chips

By Bob Francis and Lisa Picarille

What a long, strange chip it's been.

This week, IBM, Apple Computer, Inc. and Motorola, Inc. will lay out a revamped PowerPC road map in hopes of presenting a united front to challenge microprocessor powerhouse Intel Corp.

Analysts generally praised the group's plans, buy any hopes of knocking Intel off its perch are premature at best. "It's a good, solid plan, but it's about where they should have been two years ago," said Mike Feibus, an analyst at Mercury Research in Scottsdale, Ariz.

Several key elements of the PowerPC plan — notably the operating system and the Common Hardware Reference Platform (CHRP) — have been lacking (see chart). Those elements seem to be taking shape just as the chip technology appears to be ready to take another leap forward, Feibus said.

To help it compete, the PowerPC triad will build chips to run in servers, desktops and mobile servers — as do Intel's wares — but will increase clock speeds in its chips more rapidly than Intel.

The PowerPC vendors said that later this year they will ship 300-MHz systems; Intel's top clock speed will remain at 200 MHz, officials there said. By the end of next year, clock speeds will rev up to 400 MHz with a new series of PowerPC chips, code-named G3. By 2000, the PowerPC group plans a family of chips — code-named G4 — that will cut a swath at 600 MHz.

PowerPC adjustments

	Previous PowerPC strategy	New PowerPC strategy
Hardware platform supported	• CHRP • Apple • RS/6000	• Apple and RS/6000 incorporated into CHRP to give software developers one platform to write to
[illegible]	[illegible]	[illegible]
Microprocessors supported	• 601 • 603	• Expanded to include 620 chip

PowerPC systems manufacturers, including Apple, Power Computing Corp. and Umax Computer Corp., are already working on desktop systems based on a 300-MHz PowerPC chip.

Intel faster, too

Intel in Santa Clara, Calif., is hardly sitting still. The company plans to introduce new versions of the Pentium Pro with its multimedia extensioo (MMX) instruction set early next year in 200-MHz and 233-MHz versions, according to sources briefed by Intel. By the middle of next year, Intel expects to ship a 266-MHz Pentium Pro, followed later in the year by a 300-MHz version, the sources said.

Although the proposed PowerPC speeds are impressive and could give information systems managers a new processing tool, some said they are hesitant to plunge into the untested waters.

"We're not likely to use the PowerPC for much but on our Mac systems at the moment," said Erik Goldoff, an IS manager at the Centers for Disease Control and Prevention in Atlanta. "It may be a great chip, but applications are going to go to Intel systems first. It's that simple."

The Mac OS and IBM's AIX run on the hardware. Microsoft Corp.'s Windows NT Server also runs on the PowerPC, but applications must be recompiled.

With its high volume, Intel also has a price advantage. A 200-MHz Pentium Pro MMX will cost about $325, sources said. The 200-MHz PowerPC initially will cost $520, meaning that systems using the Intel chips probably will cost less than PowerPC systems, analysts said.

Missing apps stall multiprocessing

By Lisa Picarille

Apple Computer, Inc. and Macintosh clone makers are starting to rally around multiprocessing systems. But corporate users said they won't be tempted to buy until software becomes available.

Users said they are waiting for Copland — Apple's next-generation operating system that has symmetrical multiprocessing support — and third-party applications written for the PowerPC-based multiprocessors. Copland is due next summer.

But that isn't stopping Apple, Umax Computer Corp. and Power Computing Corp. Those vendors will announce Macintosh multiprocessing computers at Macworld Expo this week in Boston (see related story at left).

System design

Although the boxes probably won't win fans among general business users, they "will have major appeal for people doing graphic design, design for the Web and high-end video," said Tom Rhinelander, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Some users said they anticipate the ability to off-load processor-intensive tasks, such as rendering images. But applications need to be rewritten to take advantage of the multiprocessors.

If there were a way to create movies "in millions of colors and still have the speed that I desire on my computer, I would be thrilled," said Russ Chapman, director of technical services at the Boston office of Jack Morton Productions, Inc. The New York-based production company creates promotional materials.

But, Chapman said, "Who cares right now because there aren't many [multiprocessing] applications. So right now, there isn't a cost/performance benefit to [multiprocessing]."

[illegible]

- Mac OS needs to support symmetrical multiprocessing
- Too expensive
- Third-party developers need to come out with multiprocessing versions of their applications

Apple officials said they are developing a program to encourage developers to do multiprocessing versions of their software.

In the meantime, Apple's new 9500/180MP offers users a 33% performance increase compared with the same model with a single processor, but only on specific tasks — the current Mac OS doesn't support full-fledged multiprocessing. So a 33% performance boost on a machine that runs at 180 MHz translates to about 239 MHz of processing power, but only for certain operations, such as crunching numbers.

Pieter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif., said users might be better off buying single-processor machines that run at 225 MHz all the time.

Pace picks up in Boston

DayStar Digital, Inc. has been carrying the Macintosh multiprocessing flag on its own for a year, but it is about to get a lot more company at this week's Macworld Expo/Boston.

Apple is expected to help legitimize the market by unveiling a 604E, PowerPC-based system that runs at 180 MHz. The 9500/180MP includes 32M bytes of RAM, a 2G-byte hard drive, an 8-speed CD-ROM drive and a video card for $5,600.

Rivals DayStar and Umax are expected to announce an agreement to collaborate on multiprocessing technology. Umax also will take the wraps off a 604E-based machine — the SuperMac S900 — running at 180 MHz and 200 MHz. The price of the systems ranges from $4,000 to $4,300. Each comes standard with 32M bytes of RAM, a 1G-byte hard drive, an 8-speed CD-ROM drive, six Peripheral Component Interconnect slots and five drive bays.

— Lisa Picarille

Internet features added to Mac E-mail

By Tim Ouellette

The message is good for Macintosh users who hope for better electronic-mail capabilities, especially over the Internet.

This week at Macworld Expo/Boston, vendors will outline plans to add Internet features to their Macintosh E-mail products. The Internet's open protocols help Macintosh users overcome many incompatibilities found in mixed Macintosh/PC environments.

CE Software, Inc. in West Des Moines, Iowa, will reveal its plans to Internet-enable QuickMail, the leading E-mail software package for the Macintosh. Competitor **SoftArc, Inc.** will preview Version 4.0 of FirstClass, its groupware/messaging software with native support for Internet E-mail protocols.

Also, **Tenon Intersystems** last week licensed Software.Com, Inc.'s Post.Office Internet mail server for use in its Macintosh networking products, and Microsoft Corp. began to ship the Macintosh client for Exchange Server.

Faced with poor client software from PC vendors or limited support from Macintosh software vendors, Macintosh users hope to exploit the Internet as a way to simplify E-mail connectivity and get more features, analysts said.

For example, David Rasmussen, a Macintosh user at International Paper Co. in Memphis, said he prefers to run Netscape Communications Corp.'s E-mail software to Lotus Development Corp.'s Notes client for the Macintosh, which other users have said is slow for E-mail.

Apple Computer, Inc. scrapped plans to offer its own E-mail and directory services in Copland, the next version of the Mac OS. Instead, the Cupertino, Calif., firm provides the free Apple Internet Mail Server (AIMS) for simple Internet mail connections.

Several users posting to Usenet discussion groups said they were preparing to migrate from QuickMail, which is still a proprietary system, over to AIMS for E-mail.

Feds garner failing grades for year 2000

By Gary H. Anthes
WASHINGTON

While some federal agencies will graduate with bonors in the year 2000, most seem likely to flunk the course.

The "course" in this case is preparing systems to deal with the year 2000 problem. According to a formal survey released last week, 14 of 24 major agencies are wearing dunce caps, having earned "Ds" and "Fs" for their efforts so far to head off a digital Armageddon.

Rep. Stephen Horn (R-Calif.) compiled the report card from the results of a survey he initiated of federal agencies. "The information we have gathered will help Congress see that agencies meet their responsibilities to the American public," he said.

Although there isn't yet a congressional mandate to come to grips with the year 2000 problem, Horn's survey is the result of an April hearing on the subject.

Year 2000 problem

"The hearing revealed that there is a serious lack of awareness of the problem on the part of people in business and government," Horn said last week.

Meanwhile, Congress is working on legislation to force agencies to develop by Nov. 1 plans and cost estimates for year 2000 fixes. And funding legislation for the Department of Defense will require the Pentagon to buy only year 2000-compliant software after Sept. 30, a congressional staffer said.

"A" students include the Social Security Administration, which began planning changes to its 30 million lines of software in 1989. It expects to complete the software upgrade by the end of next year.

The Small Business Administration also won top marks for its project, which it estimated would cost $4.8 million.

Failing agencies

"F" students include the U.S. Department of Labor, which admitted it had no plan, no project manager and no cost estimate for its huge year 2000 conversion effort.

The U.S. Departments of Energy and Transportation flunked because they failed to respond to Horn's questionnaire at all.

Even agencies with a project manager were relatively clueless about the size of the effort required over the next three years, when thousands of date-dependent routines must be located, rewritten or replaced and tested. The Defense Department estimates it will cost between $350 million and $3 billion to fix its 350 million lines of computer code, nearly a tenfold variance.

The Pentagon faces an especially tough problem because it has more systems written in more languages than any other agency. Many of its millions of lines of code are undocumented, and source code is no longer available for some applications. And date routines in hardware may be especially hard to fix if the hardware is obsolete.

Despite the huge cost, neither Congress nor the White House seems inclined to boost information systems budgets for the job. An administration official with oversight responsibility for the year 2000 effort said agencies are being encouraged to submit budget requests that earmark funds for year 2000 work, but those requests must be offset by decreases in other IS projects.

"No one is as far along as we'd like them to be," the White House official said.

Kathy Adams, associate commissioner for systems design and development at the Social Security Administration, said one way agencies hope to reduce costs is by banding together to share "best practices and lessons learned."

Adams, chairwoman of the Year 2000 Interagency Committee, said a best practices document will be posted next week on the Internet at www.itpolicy.gsa.gov.

Users cool to release of controversial laptop chip

By Mindy Blodgett

Intel Corp. this week released the 150-MHa Pentium processor geared specifically for notebooks, after months of controversy over the thermal and design issues posed by the faster, hotter chip.

Toshiba America Information Systems, Inc. and Digital Equipment Corp. each immediately unveiled a laptop featuring the chip. Other vendors, including IBM PC Co., Dell Computer Corp., Compaq Computer Corp. and NEC Technologies, Inc., said they plan to follow in the next few months.

But users seem blase about the speedy chip.

"The [133-MHz Pentium processor] is fast enough for us," said Robert Womack, computer services director at Hale and Dorr, a Boston law firm. "I can't imagine rushing to buy 150s at this stage."

Industry observers said notebook vendors were leery of the 150-MHz chip because it yields less than a 10% performance boost over the 133-MHz chip.

In addition, notebook vendors must design their 150-MHz laptops so that the chip doesn't burn up other components, such as PC cards, or drain batteries.

But vendors said they are convinced that osers will want the 150-MHz notebooks.

"We have a lot of users who are always pushing the edge of the limits on the biggest and baddest," said James Bartlett, IBM's director of worldwide marketing.

This week, Toshiba announced the 730CDT. It has a 150-MHz chip, a 2.02G-byte hard drive, lithium ion batteries and a 12.1-in. active-matrix screen. The notebook, which costs $6,099, will be available in early September. And Digital announced the HiNote Ultra II. It bss s 150-MHz chip, an 11.3-in. Super VGA screen and 16M bytes of memory. Priced at $5,099, it is shipping now.

Scarcity of notebooks

A more pressing issue, users and industry observers said, has been the notebook shortage.

"The problem is backlogs at the larger suppliers," said Asmar Madyun, mobile computing support manager for the Corporate Calling Card sales staff at AT&T Corp. in Warren, N.J. "For some of the leading notebooks, there is a three-month wait. I can't tell someone who is starting work tomorrow, 'Sorry, you have to wait three months for a laptop.'"

The shortage also affects price.

"I had one vendor [saleswoman] tell me she could get me some Compaq LTE 5280 notebooks," said Doug Moran, information systems analyst at CRSS Constructors, Inc. in Denver. "Then she called back to tell me . . . they were going to cost 12% more than the initial quoted price because of lack of supply."

Analysts blamed the shortages on notebook vendors being overwhelmed by the rapid succession of Intel chip announcements and surging demand for laptops.

But some vendors said the worst supply problems are over.

"A lot of the vendors have been having the same problem," Bartlett said. "But we have been getting our volume up to levels to where we want it, and we have been getting [out] from behind the eight ball on supplies."

We review an IBM ultralight. See page 38.

Same old song: Entry-level PC prices dip

By Bob Francis

The cost of a basic entry-level corporate PC is dropping again — this time by about $500 — although it may be the last time this year.

Last week, Hewlett-Packard Co. and AST Research, Inc. joined IBM PC Co. and Dell Computer Corp. in lowering the costs of their entry-level corporate PCs.

The latest price war was kicked off by market leader Compaq Computer Corp. with its introduction of new Deskpro systems at about $500 less than a comparable PC just eight months ago.

In January, a Compaq ProLinea E desktop powered by a 100-MHz Pentium, with 8M bytes of RAM and a 1G-byte hard drive, cost about $1,600. After Compaq's recent introduction of the Deskpro line to replace that model, a similarly configured system starts at about $1,100.

In the fallout from Compaq's introduction, HP's Vectra line now starts at about $1,170, and AST's Bravo line begins at $1,300.

"The prices are looking pretty good," said Erik Goldoff, information systems manager at the Centers for Disease Control and Prevention in Atlanta. "The system prices had to come down because component prices have obviously been dropping."

Indeed, the price of components — system memory in particular — has continued to decrease. PC vendors have cut system prices four times since the beginning of the year.

But Compaq's latest systems added fuel to the price-cutting fire.

"An IS manager could expect to pay 6% or 7% more for a Compaq system before, but the oew systems cut that in half," said Martin Reynolds, an analyst at Dataquest, a research firm in San Jose, Calif. "Now everyone's reacting to that."

And though the cuts follow a long line of price drops thia year, they may be the last for a while. Intel Corp. doesn't plan to reduce prices on Pentium chips again until early next year, in a bid to avoid last-minute price cutting during holiday sales, Reynolds said.

But price isn't the only criterion for buyers. Users who move to 32-bit environments will look at higher-priced Pentium Pro systems.

"If we decide to use Windows NT for some applications, we're going to be paying for Pentium Pro systems because it wouldn't make sense to use 16-bit Pentium desktops there," said Simon Taufique, a network administrator at New York University.

Price wars

Spurred by lower prices on new models from Compaq and NEC, vendors have been busy cutting PC prices

Vendor/Product	Processor	Hard drive	Old price	New price
Dell Computer OptiPlex GXpro	200-MHz Pentium Pro	2G bytes	$3,149	$2,698
AST Research Bravo LC	166-MHz Pentium	1.2G bytes	$1,927	$1,763

Internet invasion

Cabletron's remota access/switching strategy announced this week

CyberSwitch Gateways - A central site device for supporting many small offices or home offices and a CyberSwitch for remote offices

Key features:

- Combines advanced routing functionality with firewalls
- Extends the capabilities of Cabletron's SecureFast Virtual Networking
- Supports a key multimedia traffic reservation scheme
- Supports encryption and compression over ISDN, T1, ATM, cable TV and Asymmetric Digital Subscriber Line WAN links

Cell Transfer Matrix - 75G bit/sec. ATM backplane for Cabletron's MMAC-Plus switch that adapts it for use with Internet service providers and carrier networks

Availability: Q4 1996 or Q1 1997

Switch makers woo

CONTINUED FROM PAGE 1

ternet applications.

Jumping on the bandwagon this week will be Cabletron Systems, Inc., which is expected to unveil plans for a wide array of feature-rich remote access equipment followed by its strategy for rolling out Internet provider and carrier switches (see chart above).

Already on board the Internet provider train are IBM, which recently allied with Cascade Communications Corp., and Cisco Systems, Inc., which merged with StrataCom, Inc.

3Com Corp. and Ascend Communications Corp., meanwhile, have announced remote access/switch systems.

Constant challenge

Although internetworking vendors have the high-capacity routing and switching products needed to fix the plumbing of the Internet, they face many challenges. Those include forging links with cash-strapped Internet providers and dealing with the perennial router vs. switch debates.

Bob Moscowitz, a technical support specialist at Chrysler Corp. in Highland Park, Mich., attributed the problem to the fast-growing number of users who run more bandwidth-demanding applications — such as interactive voice, data and video — on the Internet. Internet provider network infrastructures haven't kept pace, he added.

Other users agreed.

"On the application side, users love the neat graphics of Web sites. But from a network perspective, there would be much less strain on nets if the fabulous graphics and images were smaller and pages were more text-based," said James Wiedel, director of networking at the University of Southern California in Los Angeles. "The networks can't handle the traffic volumes."

Analysts said 'net providers need to bulk up their networks as soon as possible but added that is far easier said than done.

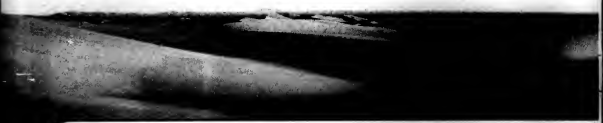
"ISPs and carriers need more industrial-strength platforms, but it's less of a technology issue and more of a [business] challenge," said Eric Hindin, a senior program manager at The Yankee Group in Boston. Some vendors, such as Cabletron, don't yet have agreements with any Internet providers and carriers to buy their switching equipment, while others have some agreements, but just for routers, he added.

"We are in a time of serious troubles," Moscowitz said. "We have one class of ISPs that don't have the money to fix congestion situations by adding bigger buffers, more memory, trunk cards and high-speed lines to their routers."

"Adding routers and faster lines between them would help do load balancing and eliminate some problems. But the expense of that would kill many ISPs," Wiedel agreed.

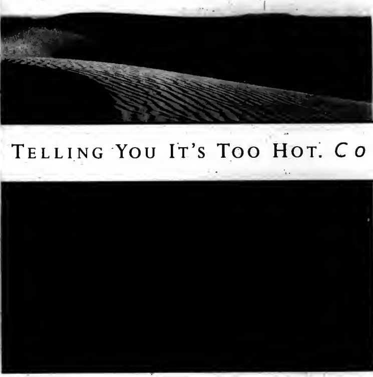
But for the Internet providers with money to spend, analysts said the big decision is whether to continue using routing or move to switching (see chart, page 1).

"ISPs in particular, and some carriers, desperately need to upgrade their overburdened router networks into more reliable and powerful networks based on switching," said John Morency, a principal at The Registry, Inc., a consulting and research firm in Newton, Mass. "ISPs have had and are having severe capacity problems that have translated into big headaches for users."



A DESKTOP THAT'S ACTUALLY CAPABLE OF

Talk about considerate. Beyond having a thermal sensor that tells you if it's too hot, the new Compaq Deskpro will warn you if its hard drive's about to fail anywhere. It's all part of what we call the next generation of Intelligent Manageability. Among other things, it



SNA users targeted for frame relay

By Kim Girard

Carriers are trying new ways to lure skeptical IBM SNA network users — a huge, untapped market — into the frame-relay fold.

According tu analysts, most customers could save roughly 20% to 40% by changing from private-line networks to public network-based frame-relay services.

Currently, just 20% of about 50,000 SNA shops use frame relay within the corporate network, said Tom L. Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. He predicted the bulk of frame-relay revenue won't come from SNA customers until 1998.

SNA, or Systems Network Architecture, is a 22-year-old IBM network architecture still used for most mission-critical legacy applications. Users typically run SNA traffic over low-speed, expensive point-to-point and multidrop private lines

Frame relay is a packet-switching technology that transmits variable size frames of data. The technology is best suited for bursty traffic.

Converting from leased line to frame relay lets users consolidate multiple branch applications on one netwnrk. Carriers use frame-relay access devices (FRAD) to convert LAN and nther data protocols to frame relay.

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Northern Telecom has paired up with Motorola, Inc.'s Information Systems Group in a three-year agreement to offer Motorola's Vanguard FRADs in frame-relay installations.

Mad for FRADs

Recent SNA-to-frame-relay announcements:

- **Pacific Bell's network integration unit announced that FasTrak will support SNA – initially through FRADs and managed router services.**
- MCI partnered with Synch Research to give MCI's HyperStream frame-relay access to Synch's FrameNode internetworking FRAD.
- **Lucent Technologies partnered with Hypercom Network Systems to provide FRADs that merge voice and data.**
- AT&T, Cable & Wireless; Sprint and CompuServe are all providing SNA-to-frame-relay service.

Price and performance are what drew Walgreen Co. in Deerfield, Ill., to frame-relay service.

"It's cheaper than leased line," said Ray Sheedy, director of corporate telecommunications at Walgreen, which is slowly migrating about 800 of its 2,250 stores to frame relay. "It's priced right."

Despite the obvious attraction of price, anuther analyst cautinned against expecting a stampede to frame relay.

"I don't think we'll see the remaining 80% of SNA [users] jump over to frame relay over the next two years," said Beth Gage, broadband analyst at Telechoice, Inc. in Verona, N.J.

Perhaps 20% to 30% of the remaining SNA market will migrate tu frame relay, but many network managers will stick with their usual SNA private lines, she said.

Melanie Hanssen, senior manager of frame-relay marketing at MCI, said many customers are concerned about how SNA will function in a frame-relay environment. But by installing FRADs, users are finding that critical traffic can be prioritized and managed end-to-end, she said.

SNA users targeted for frame relay

By Kim Girard

Carriers are trying new ways to lure skeptical IBM SNA network users — a huge, untapped market — into the frame-relay fold.

According to analysts, most customers could save roughly 20% to 40% by changing from private-line oetworks to public network-based frame-relay services.

Currently, just 20% of about 50,000 SNA shops use frame relay within the corporate network, said Tom L. Nolle, presideot of CIMI Corp., a consultancy in Voorhees, N.J. He predicted the bulk of frame-relay reveoue won't come from SNA customers until 1998.

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Vendors schedule calendar standard

By Tim Ouellette

Calendaring and scheduling software vendors envision a day when different products will exchange appointment information over the Internet.

But don't mark it on your calendar yet.

Twenty firms, including Lotus Development Corp., Microsoft Corp., On Technology Corp., FTP Software, Inc., Novell, Inc. and Netscape Communications Corp., met recently in Mountain View, Calif., to develop a standard for submission to the Internet Engineering Task Force, the Internet's standards body.

It takes time to organize your calendar

Internet Calendar Access Protocol *(Client to server)*	Lotus/Clear Blue Software
Scheduling Wide-Area Transport Protocol *(Client to server)*	Phase2
VCalendar *(Client to client)*	Versit Consortium
Simple Scheduling Transfer Protocol *(Client to server)*	On Technology
MIME content application property profile for calendaring and scheduling *(Client to server)*	Microsoft

To do that, they must set up a workgroup and hash out the various proposals on the table (see chart). Responses are expected by next March. A standard and actual products could follow soon after.

But the group also will have to overcome a history of standards-effort failures and focus on providing an open standard, not a vendor-dictated one.

"As long as it [any standard] is open, even if I have to go through a small gateway, I am all for it," said Stephen Lopez, director of systems and technologies at the National Board of Medical Examiners in Philadelphia. He said the use of Novell's GroupWise is widespread internally, but appointments with outside doctors are still made by telephone. "Right now, we go bonkers trying to coordinate schedules with external committee members," Lopez said.

But not all user sites are united on one product. Many companies have a potpourri of scheduling software or areas with none at all, and they are more concerned about getting better enterprise products than maintaining several different software packages.

A white paper delivered at last week's meeting noted that when a worker is bogged down scheduling an appointment via telephone or fax, it reverberates through the organization. Hence another standards effort.

The difference this time is the Internet.

"The thing none of these efforts had before is the ubiquitous connection the Internet provides," said Jay Batson, president of On Technology in Cambridge, Mass. The Internet allows World Wide Web browser access and reduces communication problems, he said.

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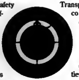
Seafood Credit Corp.

Jasmine
SDK

Revamp flies off course

Huge FAA modernization effort falls under fire; critics question usefulness of downsized project

By Gary H. Anthes



It has been a bumpy ride the entire way for the FAA's air traffic control modernization program. Conceived in the mid-1980s, the hugely ambitious effort has been plagued by mismanagement, cost overruns, missed deadlines, software that doesn't work, unhappy users and other horrors.

The project was intended to be a top-to-bottom overhaul of the computers, software, radar units and communications networks used by controllers. The goal was to lower operating costs, improve system reliability, enhance safety and improve flight operation efficiency.

After several midcourse corrections, the $7 billion Advanced Automation System (AAS) program was greatly downsized and restructured two years ago. This essentially means the FAA will enter the 21st century having solved its equipment reliability problems, but most of the other modernization goals won't be met.

For example, a $1 billion project to combine the two systems used to control aircraft near airports and en route to airports was grounded. The department also canceled a $650 million system to replace hardware and software at the facilities that control aircraft within 20 to 30 miles of airports.

In addition, the plan to replace equipment in towers at 150 airports was reduced to only the 70 largest airports. And many features in the surviving systems were deferred.

"The [system] will have the potential to be upgraded, but initially it will just give us the same old thing," said Mike Connor, director of safety and technology for the National Air Traffic Controllers Association.

"When the AAS was first promised, it had all these new features, but now it is basically just a replacement of the radar screen for air traffic controllers," said an analyst for a congressional aviation oversight committee.

For example, one feature that was deleted would have included voice-activated commands and hand-held devices, allowing controllers to move away from their keyboards to avoid visual obstacles.

Observers said the AAS replacement program is off the ground, and the FAA said the now significantly downsized project will arrive at the gate ahead of schedule.

"It is now back on track and will deliver important safety improvements that will carry aviation into the next century," Transportation Secretary Federico Pena told a congressional oversight committee last month.

"We have learned from our past mistakes," said Dennis Koehler, program director for airways facilities requirements at the FAA. "Our program is on track, on schedule and sound."

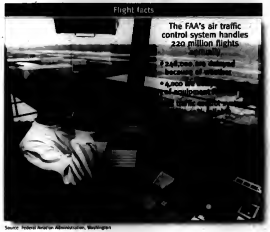
Efforts to stay on schedule were made a year ago when the FAA decided not to wait for new client/server software to be written and to move old code off the ancient IBM mainframes that deliver radar and flight-plan information to controllers. That code is being moved to five new interim mainframes, the first of which will go online in Chicago in December. This is 10 months earlier than officials anticipated a year ago.

Meanwhile, work continues on the Display System Replacement (DSR) project, the centerpiece of the modernization program.

DSR eventually will move controllers to a client/server architecture. It replaces computers, radar displays, controller workstations and networks, along with those five mainframes, at the nation's 20 Air Route Traffic Control Centers, which handle traffic among airports.

The first DSR hardware will be installed in Seattle by year's end and will be in operation by mid-1998, the FAA said. The last is due to be installed in June 2000.

Flight facts


The FAA's air traffic control system handles 220 million flights annually

Source: Federal Aviation Administration, Washington

Ancient systems tax FAA

CONTINUED FROM PAGE 1

approaching the ragged edge," said a spokesman for the Aircraft Owners and Pilots Association in Frederick, Md. "They definitely need to continue with modernization."

Investigation shows problems

That "ragged edge" is spotlighted in a special investigative report issued earlier this year by the National Transportation Safety Board (NTSB), which detailed the following concerns:

- The backup control system lacks several safety features found in the primary system, such as automated warnings that aircraft are flying too low or too close together.
- Because of frequent hardware failures, the 25-year-old mainframes that present radar and flight-plan data to controllers often operate without full redundancy. The system in the New York region operated in a state of "compromised redundancy" more than 56% of the time during one 18-month period.
- Operating in the backup mode can greatly increase the workloads of already-stressed controllers by requiring more manual processing and "rebuilding" of flight information from memory.
- Many controllers aren't proficient in using the backup system because they receive limited training.

"Controllers are under enormous pressure, and anything that goes slightly wrong makes their job inordinately harder," said Peter Neumann, a specialist in computer reliability and safety at SRI International in Menlo Park, Calif. "I think we've been pretty lucky in the past."

Nevertheless, the NTSB concluded, "The public should not be unduly alarmed by recent press accounts of … equipment failures. In the vast majority of computer outages, controllers were able to provide safe aircraft [distances] using

Milestones in air traffic control modernization

1983
Planning for Advanced Automation System (AAS), the heart of the FAA's air traffic control modernization, begins.
Estimated cost: $2.5 billion
Estimated completion: 1994

June 1987
A near midair collision close to Casper, Wy., is caused by lack of a "conflict alert" feature in a backup control system used while a primary system is down.

1988
FAA awards AAS contract to IBM.
Revised cost:
$4.8 billion.

December 1990
IBM confirms 19-month slippage in AAS project.

Air Force system shows the way

Off-the-shelf components save million$

It is apparently possible to develop a safe, effective air traffic control system for less than $1 billion.

The FAA and the U.S. Air Force developed just such a system for Edwards Air Force Base in Rosamond, Calif. Unlike most FAA efforts of this type, this one extensively used commercial off-the-shelf hardware and software. Total investment: about $15 million and five years.

Although the FAA is trying to accomplish a similar task on a much broader scale, the Air Force project is noteworthy because of its shrink-wrapped approach.

According to the National Transportation Safety Board (NTSB), the air traffic control system, which went online two years ago and is called High Desert Tracon, uses redundant primary computer systems. When a Sun Microsystems, Inc. SPARC 4/470 fails, an identical machine running the same software kicks in instantly and transparently.

Conversely, the standard in commercial aviation today relies on a primary system backed up by a different, and less capable, standby system.

Use of off-the-shelf technology and standard Unix will let the Air Force easily upgrade to Sun SPARC 1000 servers without writing a single line of code, the NTSB said.

"The ingenuity associated with the development of the High Desert Tracon system deserves consideration as a model for future air traffic development and procurement programs," the NTSB said in an investigative report issued earlier this year.

— *Gary H. Anthes*

Who's flying where when the lights go out?

Air traffic controllers are more worried about communication outages than they are about computer breakdowns.

But the biggest fear of all is for power outages, when all computer and radar systems can go dark. A one-second outage in Chicago in September 1994 caused 477 flight delays.

And a year ago, at a control facility near Oakland, Calif., the primary and both backup power systems failed. During the hour that radar was lost, two planes came dangerously close, but a collision was avoided by pilots who could see each other.

According to another anecdote supplied by an investigative report issued by the NTSB, a pilot near Washington radioed a Mayday call to a controller when he lost an engine, but the controller's station couldn't receive the radio frequency set aside for emergencies.

The pilot was able to restart his engine at 8,000 feet and continue his flight — without ever talking to the controller.

In the New York area, controllers have learned to avoid issuing clearances to planes passing through known radio "dead spots" caused by obstructions.

"When you have no communications, you kind of have airplanes wandering around out there, and they are not controlled anymore," said Mike Connor, director of safety and technology for the National Air Traffic Controllers Association.

— *Gary H. Anthes*

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backup system."

Air traffic today is protected by a hierarchy of redundant systems, people and procedures, according to David Tuttle, program director for operations at the FAA. If several layers of systems all go out, controllers can still work safely using manual and pilot-assisted procedures, he said.

Tuttle noted that the ultimate safeguard remains the option of leaving planes on the ground or in holding patterns. "The intent is to maintain safety, even if we have to take an economic impact; we just throttle the traffic back," he said.

Mike Connor, director of safety and technology at the National Air Traffic Controllers Association in Washington, was less sanguine. He said backup systems don't always offer complete protection. "They don't give you all the safety features; they just give you a basic radar picture and, in some cases, the third level of [backup] is just keeping track of where everything is in your head," he said.

"These failures have become a safety issue," said Connor, whose organization is the labor union for 15,000 U.S. controllers. "The equipment is just flat wearing out."

Indeed, 1960s-era computers are so fragile that components can literally crumble when handled. Replacement parts for IBM 9020E mainframes, which IBM no longer supports, must sometimes be scavenged from an FAA training facility in Oklahoma. And as the computers have aged, many qualified technicians have retired, further eroding maintenance quality.

Fighting problem plague

The FAA's bid to modernize air traffic control systems began in the mid-1980s but has been plagued with problems for most of its life (see related story, above). The project's goal was to more fully automate control operations to make them safer and more efficient.

Some experts worry that manual procedures may not provide adequate backup when systems fail. For example, in a Sept. 8 Chicago computer outage, "confusing and contradictory information" was passed to controllers as to which system to use, the NTSB said. A controller with 40 to 50 aircraft on the ground at the time told the NTSB he was "very fortunate the outage did not occur after [he] had released them for departure."

"Pilots are satisfied that the backup systems are adequate," said a spokesman for the Air Line Pilots Association International in Washington. One reason is that many planes have a system that shows radar images of nearby aircraft and issues an alert if any get too close.

"But some big airplanes, such as cargo and charter carriers, don't have it," the spokesman said. "Those pilots are more concerned about flying in crowded skies."

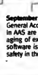
November 1992
IBM announces project is now 33 months late and scales it back.
Estimated cost: $5.1 billion.

April 1994
Independent study commissioned by the FAA finds that AAS architecture and software design have "a high risk of failure."

June 1995
Major computer outage at Washington Air Route Traffic Control Center lasts 41 hours.

July 1995
Outage at Chicago Air Route Traffic Control Center lasts 122 hours.

January 1996
National Transportation Safety Board calls the air traffic control system "safe" but questions controller training, reliability of primary systems and adequacy of backup systems.

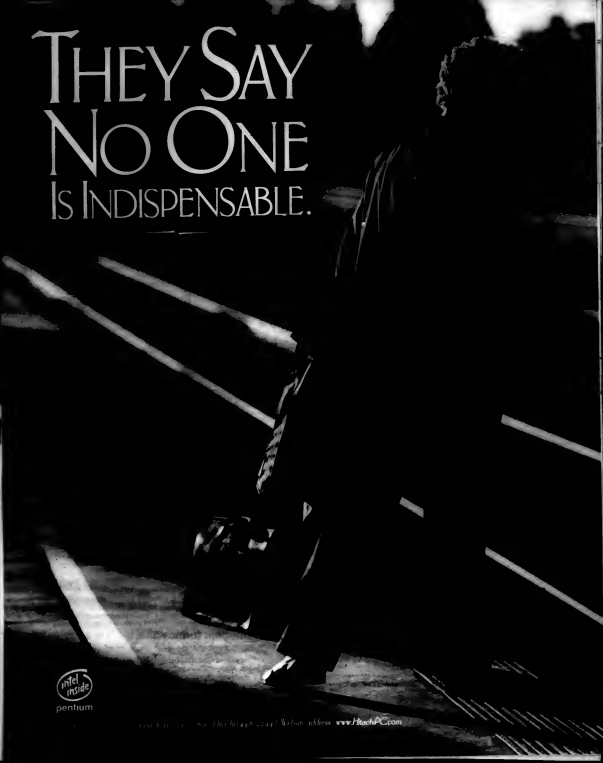


September 1992
General Accounting Office says delays in AAS are "increasing risk that the aging of existing hardware and software is reducing the margin of safety in the air traffic control system."

December 1993
Estimated project cost has grown to $5.9 billion.

June 1994
AAS is restructured, and major parts are canceled. Project is now headed by Lockheed Martin Corp. Estimated cost: Drops from $7.6 billion to $6 billion. Estimated completion: year 2000

February 1996
Boston Globe reports that seven of nine radars providing primary and backup information for Boston controllers go down simultaneously.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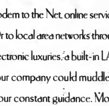

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Paradigm drift

Hypberbole *n*: extravagant exaggeration; see also *computer industry*

The most refreshing escape I know from the incessant din of computer industry hyperbole is a visit to an independent user group. Last week I had the opportunity to spend some time at the New Orleans meeting of Share, one of the three big IBM user organizations.

Share is a pretty technical bunch of folks. The members run bet-your-business applications — the kind where two hours of downtime *a year* is considered a record to improve upon.

But they're not just big iron bigots. Sessions on Notes, the Internet and Unix were packed.

Share members live in the grimy real world where the technology rubber meets the implementation road. And the dominant emotion I sensed at this year's meeting was frustration with the overhyped benefits of new technology.

When I asked five Share members which trade shows they visit these days, four said they have forsaken trade shows entirely because of the hype. The fifth said he goes to shows mainly to steel himself against the inflated expectations of his users who are also in attendance. When asked what *Computerworld* could do to meet his needs better, another user responded wearily, "Just help me cut through all the hype." Another Share member summed up his attitude toward the industry this way: "They promise, but we're the poor suckers who have to make all this stuff work."

The computer industry is infested with more hyperbole about fundamental changes to our work and way of life than at any time in the 15 years I've been watching it. Just for fun, I ran a search of press articles that mention "computer" and "paradigm" in the same story. The number increased from 1,600 in 1992 to 3,900 last year. Paradigm shifts are one of the fastest growing segments of the market.

Client/server, the Internet and other technologies may eventually shift a few paradigms, but I sense that the relentless cascade of promises is wearing thin on users who have to make technology work. Ironically, when I arrived back at the office last week, one of the first pieces of mail I opened was from a company that declares it is "leading the self-service paradigm shift." Careful. I'm not so sure all your prospects are so willing to follow.

Paul Gillin

Paul Gillin, *editor*
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[redacted]

On the lighter side

I just read your "10 reasons computers must be male" ["Inside Lines," CW, June 3] from *Women in Higher Education*, July 1996, and found it hilarious and factual. A little humor in this job goes a long way. Thanks for making my day a little brighter.

Mary Retterer
President
Ridgewater College
Willmar, Minn.

Honesty best policy

While most of the suggestions in Michael Cohn's "Helpful hints for scrubbing cyberspace" [CW, July 1] column were very humorous, I believe one makes perfect sense. Simply have everyone be honest about who they are while on the Internet. If you are into chat rooms, what is wrong with using your name? If you believe you have a right to participate in porn, why not admit it by using your name? Currently, it sure seems to me that the Internet is very much like the Ku Klux Klan, where no one wants to show his or her face.

Arn Kratzer
Santa Clara, Calif.

A perfect match?

If I can believe your article ["Swappable drives due," CW, July 1], Western Digital Corp. has produced the first truly disposable disk drive. Given just over a 10-day mean time before failure, one should expect to purchase these little gems by the carton. Install these devices at your company, and you will have little need to educate your users on the importance of daily (hourly?) backups. In just one month, your users will have more firsthand experience than many users get in a lifetime.

Might I suggest augmenting each Nordic drive with an Iomega Corp. Zip? The Nordic would address the "performance and portability issue" of the Zip, and the Zip, in turn, could address the "damn near DOA issue" presented by the Nordic. A marriage made in heaven?

Harold Solbrig
3M Health Care
Murray, Utah

The real Next story

Next Software has conceded victory to Microsoft, and the trade press still can't digest a Next press release correctly. Take note of your July 8 time line ["Next's road to OpenStep"], which incorrectly claimed that Next abandoned NextStep in January. Here's what really happened: Next Software merely renamed NextStep to "OpenStep for Mach." Some halfwit industry analyst mistook the new name for an abandonment of NextStep, and the trade rags have been getting this wrong ever since.

Computerworld is not immune to this, as evidenced by another error in the same time line. We're led to believe that Next shipped OpenStep for the Mac OS in June, alongside OpenStep/NT. I wonder how many hopeful Macintosh programmers are calling Next, thanks to your error. It should be "Mach OS," with an 'h,' folks: the system software formerly known as NextStep.

Pohl Longsine
Lincoln, Neb.

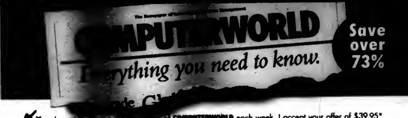
Politics play part in quality software

I agree with David Wright's article ["Getting back quality software," CW, July 8]. His commentary also applies to government and corporate information systems, where in-house and outsourced development efforts all too often fail.

However, Wright's assertions as to what is needed are too simplistic. Deciding to "pay the price" is a moot point when hundreds of millions of dollars are wasted on efforts that produce zero usable code. Hiring the "best programmers" is certainly no guarantee of success, but it's the best place to start, especially with so many projects populated with wanna-be software experts. The real root of the problem is that the political imperative always wins. Those in charge — the nontechnical — are truly not responsible for bearing the consequences of failure.

Herbert B. Elliott Jr.
Las Vegas
helliott@ix.netcom.com

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.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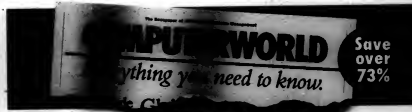
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   - 20. Finance/Insurance/Real Estate
   - 30. Medical/Law/Education
   - 40. Wholesale/Retail/Trade
   - 50. Business Service (except DP)
   - 60. Government - State/Federal/Local
   - 65. Communications Systems/Public Utilities/Transportation
   - 70. Mining/Construction/Petroleum/Refining/Agriculture
   - 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
   - 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
   - 90. Computer/Peripheral Dealer/Dist./Retailer
   - 95. Other ____ (Please specify)

2. TITLE/FUNCTION (Circle one)
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   - 19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
   - 21. Dir./Mgr. MIS Services, Information Center
   - 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech Planning, Administrative Services
   - 23. Dir./Mgr. Sys. Development, Systems Architecture
   - 31. Programming Management, Software Developers
   - 41 Engineering, Scientific, R&D, Tech. Management
   - 60. Sys. Integrators/VARs/Consulting Mgt.

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   - 12. Vice President, Asst. VP
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   OTHER PROFESSIONAL MANAGEMENT
   - 80 Information Centers/Libraries, Educators, Journalists, Students
   - 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)
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   - (a) Solaris
   - (b) Netware
   - (c) OS/2
   - (d) Unix
   - (e) Mac OS
   - (f) Windows NT
   - (g) Windows
   - (h) NeXTstep

   App. Development Products ☐ Yes ☐ No
   Networking Products ☐ Yes ☐ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

		1 At this location	2. Entire Organization
A.	20,000 +	☐	☐
B.	10,000 - 19,999	☐	☐
C.	5,000 - 9,999	☐	☐
D.	1,000 - 4,999	☐	☐
E.	500 - 999	☐	☐
F.	100 - 499	☐	☐
G.	50 - 99	☐	☐
H.	20 - 49	☐	☐
J.	10 - 19	☐	☐
K.	1 - 9	☐	☐

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Michael Cohn

The smart money is on dumb old storage

We're creating billions of bytes per day, and it's got to go somewhere.

I suffer from techno-envy. Everyone I know has a powerful PC and incredible cyberware, and all I've got is a massive headache. Worse, the guys who make those boxes and browsers have quickly become the billionaire darlings of Wall Street. I wish I had five bucks for every new high-tech stock that hit the Nasdaq. Actually, for one of them I do, but I got in at $84 per share.

Now it's time for me to get even. Because I've figured out the next wave, the next big-buck opportunity — and that's storage. That's right, storage. Boring old direct-access storage devices, CD-ROMs and tape.

Think about it. Everyone's got the World Wide Web. Everyone's got cellular phones, laptops, gizmos and gadgets. There are billions of electronic transactions per minute — each one has to be audited, tracked, billed and stored.

Purchase smoked salmon in cyberspace. Obtain opera tickets online. Visit chat rooms and home pages. How many hits? Who said what? Who bought what from whom? From Citibank to the CIA, everyone's listening, monitoring and storing. Hooray for storage! I'm investing in CDs, hard drives and magnetic tape. Heck, I'm even buying Scotch tape.

We video-record everything: Security cameras watch parking lots and ATMs. Camcorders capture America's not-so-funniest videos. Sports channels tape kids competing on skateboards. Lawyers film kids falling off skateboards.

So how do you make money in storage? Don't do it the hard way. Don't try to invent the next generation of storage technology. Don't try to come up with postage stamp-size diskettes that hold a bunch of stuff. People lose postage-size stuff all the time — look at the post office.

Don't try to get in the network business, either. Sure, once something's stored, you probably want to zap it around the nation a few times. But the phone companies, cable companies and online service companies are already there. You won't make a buck. Competition's too fierce — although you couldn't prove it by my online service, which socks me $6.95 per minute just to see who's pitching for the Pirates.

And don't try the security business, either. Plenty of folks are already peddling cryptomail, packet-protectors and firewalls. The security business is too risky for me; one mistake, and you're toast. I think it's easier just to steal one cyberbound Visa number and head to Vegas before anyone finds out.

I'm leaning toward the furniture business. You've got to put all the stuff someplace, like bookshelves or racks. Thanks to our paperless society, we're taping more, backing up more, mirroring more — we need more storage for storage. Or maybe I'll play the metals markets. The demand for all this magnetic stuff (cadmium, diskium, tapeium) will send prices sky high. I've heard test labs are meddling with storage media made from plastic or even paper, but that could bring us right back where we started.

There's money to be made out there. The world is full of information. Even at this moment, we're creating billions more bytes of it. So if you're like me, you'll keep figuring out ways to capture it and store it. With so much laying around, I just hope no one asks us to retrieve it.

Cohn works at a large computer company in Atlanta, where his career is backing up and may not be recoverable.

Patricia B. Seybold

It's time to get serious about Java

Check out this story of a robust reservations network built with Java.

I keep hearing information systems managers and developers say, "We're keeping an eye on Java, but we don't think it's ready for prime time."

My answer is always the same: "Java is ready for prime time. What are you waiting for?"

Just ask Elmer Baldwin. Baldwin is president of Via World Network, a unit of Andersen Consulting. Via is an Internet-based travel network designed for the business market. It handles online travel planning, booking, transactions, ticketless travel, settlement, reconciliation and the capture of travel usage data for corporate customers.

And Via was written entirely in Sun Microsystems' Java.

Via comprises a front-end application and a back-end engine for rules processing and transaction processing. There are more than 200,000 lines of code in the application alone.

"Java is absolutely ready for prime time," Baldwin says. "It's the most bulletproof language we've used. We don't have to worry about memory leaks. If we had done this in C, we would still be debugging."

Via is in controlled rollout within Andersen this month. By late fall, several Fortune 500 companies will process their travel plans through Via. The system "will be open for prime-time business" in the first quarter next year. Baldwin says the system his group developed using Java is robust and will handle heavy transaction loads.

Granted, Baldwin's group did an exquisite job of architecting the application and designing a "system to build the system." The initiative began about nine months ago. Baldwin engaged the most seasoned client/server architects from Andersen, including the team that developed the firm's Universal Construction Tool for client/server applications. This team, in turn, designed the architecture and training. They trained 120 programmers to be Java programmers, half of them in the Philippines. They embedded strict object-enforcement techniques into the training and taught the programmers to use, without question, the "software black boxes" developed by the architects.

The result is a very impressive distributed system, designed and deployed in record time.

Baldwin says the only problem the group had with Sun was the availability and performance of Sun's compiler and development tools. "There are four Java compilers on the market today, and three of them run on Windows NT. We had selected Sun Solaris as our initial platform. In the crunch, Sun flew a team to Minneapolis to address the issue.

"We also had some integration problems with the Oracle database Oracle Client Interface layer, but we've worked them out," Baldwin says.

What about the lack of higher-level tools and a complete environment for Java development? "Our programmers were C and C++ programmers. They were immediately comfortable with Java," Baldwin says. "And we developed our own paperless development environment using Lotus Notes to handle project management, check-in, check-out and version control."

"In the history of programming languages, there's never been a larger quality assurance effort with any language than there is with Java," Baldwin says. "There are thousands of designers and developers all over the world beating on Java."

Granted, Baldwin's team at Via World Network did a lot of things right. But the fact remains that they've built an entire multiairline reservations and reconciliation system using Java.

If that's not ready for prime time, I don't know what is.

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is pseybold@psgroup.com.

You see a horse race. We see two thoroughbreds.
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WHERE DO YOU WANT TO GO TODAY?

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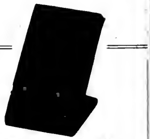
WINDOWS NT
WORKSTATION
Microsoft
Windows
95

HP's Vectra line grades well for corporate needs, 40

PDAs meet PIMs



IntelliSync lets the Pilot PDA link to the PC, which allows data transfer and synchronization of applications such as scheduling

By Mindy Blodgett

Some road warriors want the latest devices with all the trimmings — the fastest, lightest laptop, the latest "smart phone."

But a good personal digital assistant (PDA) that links to his scheduling software is all Bruce Simon is looking for.

"I don't want to drag around a laptop," said Simon, president of Omaha Steaks International, Inc. in Omaha. "But I need to keep up with my scheduling and appointments."

Vendors are working to add improved connectivity to PDAs and personal information managers (PIM). For instance, Geoworks in Alameda, Calif., says it will soon add features to its Geos operating system for smart phones and PDAs that will give smart phone users access to networked applications such as electronic mail and group scheduling.

PDA connectivity

Near the front of the pack is Puma Technology, Inc. in San Jose, Calif., which recently shipped IntelliSync software for U.S. Robotics Corp.'s Pilot organizer. IntelliSync was designed to link contact management and scheduling applications that run on desktops or notebooks with Pilot software.

The software supports several PIM and group scheduling packages, including Lotus Development Corp.'s Organizer 2.1, Microsoft Corp.'s Schedule+ for Windows 95 and Starfish Software, Inc.'s Sidekick for Windows and Windows 95. Puma uses infrared technology for the data exchange.

Simon, a longtime Pilot user, said the software definitely is a step in the right direction.

"I just push a button, and it takes about 15 seconds to synchronize about 450 addresses," said Simon, who has been testing the new software.

Market boost

Tiernan Ray, an analyst at Technologic Partners, Inc., a consultancy in New York, said the Puma announcement is the kind of development needed to advance the PDA market.

"Users need better connections to their desktops," Ray said. "Until developments like intelliSync, PDAs were standalone devices. You need to be able to exchange data."

Joe Custer, director of Eastern U.S. and European sales for Chromatic Research, Inc., in Sunnyvale, Calif., is another beta tester of the product.

"I use Lotus Organizer, and before this software, it was really a challenge to keep things updated between the Pilot and my desktop," he said.

IntelliSync for Pilot costs $69.95. Pilot, which was released in March, costs $299 and weighs in at 5.7 ounces.

PC hard drives keep growing and growing…

Western Digital's enterprise drives

- **Capacity:** 2G bytes and .4G bytes
- **Form factor:** 3½-in. by 1-in.
- **SCSI support:** Ultra Fast/Wide
- **Transfer rate:** 10M, 20M and 40M byte/sec.
- **Availability:** September

By Jaikumar Vijayan

PC storage vendors are continuing to push the capacity envelope on the desktop beyond the current range of 1G byte to 2G bytes.

Last week, for instance, Western Digital Corp. introduced two drives that feature formatted capacities of 2.1G bytes and 4.3G bytes. The new Western Digital drives — which are the first high-performance drives from its newly created enterprise storage unit — are being aimed at higher-end desktop audio and video applications and PC servers.

The 3½-in.-wide, 1-in.-high Enterprise drives come with a number of performance-

PC hard drives, *page 38*

IBM's ThinkPad 560: Quick, light and no frills

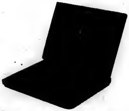
By James Connolly

The IBM ThinkPad 560 is just one entry in a class of new notebook computers that may make you reevaluate your computing needs. It isn't for everyone.

On first impression, you might say, "Holy cow, they packed a lot of computer into a small package."

It is only 1½-in. thick, and it is light at 4.1 pounds. But it is quick — our test machine was based on an Intel Corp. 120-MHz Pentium processor — with a 12.1-in. thin-film transistor color screen and a full-size keyboard. Like most ThinkPads, the 560 has a few neat design tricks: The casing and battery are molded into a ripple shape, which makes it easier to carry; and an external dial makes it easy to control the volume on the decent-sounding speakers.

The 560, starting at $2,699 and available for the past month, can serve as a fine lightweight portable for people who want to do basic computing.



ThinkPad 560 *fills basic computing needs*

But you might wonder what "basic computing" actually is anymore. One way to save notebook weight is to exclude the floppy and CD-ROM drives — as IBM did with the 560. You can connect such drives with cables, but packing them into a computer case nullifies the weight advantage. And two extra drives plus cables sdd up to four more items you can forget to pack or that you can lose at the worst possible times.

Two other trade-offs are the 810M-byte hard disk — relatively small in the Windows 95 era — and the fact that the 560 doesn't work with IBM's new standardized docking stations.

Connolly is *Computerworld*'s technology evaluations editor.

PC hard drives

CONTINUED FROM PAGE 37

enhancing and high-availability features. These include support for Fast/Wide SCSI interfaces, up to 40M-byte/sec. transfer rates and fast data access times.

Prices will be announced when the drives ship next month.

Other vendors with similar disk drives include Seagate Technology, Inc. and its Barracuds drives, IBM and its Ultrastar 2 and Quantum Corp. and its Viking drives,

The availability of such high-performance drives boosts storage capacity on servers and significantly increases maximum internal data transfer rates for users.

"If I have s 4G-byte hard drive, it is going to be possible for me to transfer the contents of several CD-ROMs into it and access the data much faster that way," said Peter Prellwitz, a microcomputer support specialist at W. B. Saunders Co. in Philadelphia.

PHILIPS

HP's Vectras fill corporate bill

By Howard Millman

Hewlett-Packard Co.'s new Vectra VA and XA model PCs were designed to appeal to corporate customers by promising reduced cost of ownership and increased performance. HP is breaking the model used with its other product lines by offering a powerful Spartan box and letting users configure it for their needs. Street prices start at less than $3,000 and rise to $5,000 for a fully loaded network-ready Vectra XA with a monitor.

Our VA 6/200 test machine contained a 200-MHz Intel Corp. Pentium Pro CPU, 32M bytes of extended data output dynamic RAM and an eight-speed internal CD-ROM drive. The unit's standard 1.2G-byte hard drive is adequate if you deploy the Vectra as a fat client on a network. For a stand-alone environment, you should consider HP's optional 2.5G-byte drive.

Ready to run

Transferring the Vectra from the box to the desktop took just minutes with the help of illustrated instructions and a CD-ROM that contained configuration information.

During the initial boot sequence, the system's BIOS offered fast access to the setup screens.

Our VA 6/200, clearly designed for business use, lacked amenities such as a modem, network card and bundled applications. The only software included was Microsoft Corp.'s Windows NT 3.51 Workstation; even that is optional on the lowest-end VA models.

Although the lack of hardware and software amenities was disappointing, the design of the Vectra made it easy to add our own expansion cards. The case opened without tools, and all internal components were readily accessible, including the two Peripheral Component Interconnect (PCI), one Industry Standard Architecture (ISA) and one PCI/ISA vertically stacked slots. Despite the unit's streamlined desktop design, the four-slot configuration leaves room for an additional disk drive or a tape backup.

HP's integrated Cirrus Logic, Inc. 64-bit video controller competently handled a wide range of graphics-intensive applications, including one-fourth screen video. Mounted on the motherboard and wired directly into the PCI bus, the controller provides resolutions of up to 1,600 by 1,200 by 16 million colors.

Externally, the Vectra offers the usual array of ports, including two nine-pin serial ports. We would rather see one nine-pin and one 25-pin serial port because many external modems still use 25-pin serial connectors.

To assess the Vectra's performance under varied conditions, we installed Windows 95 — using V Communications, Inc.'s extraordinary System Commander to manage the multiple operating systems — and added an internal modem. Our 32-bit test applications included Microsoft's Office and Corel Corp.'s WordPerfect Suite.

The high-performance 440FX chip set, combined with 32M bytes of extended memory, 256K bytes of Level 2 cache and an integrated drive electronics controller that transfers data at an impressive 16M byte/sec., provided exceptional file-handling speed and memory management. We opened several memory-hungry applications, including the full range of Microsoft's Office applications plus Netscape Communications Corp.'s Navigator 2.0, and didn't notice any appreciable decrease in performance. Furthermore, the hard-drive access rate was minimal, even when opening and closing large .AVI files along with the productivity applications.

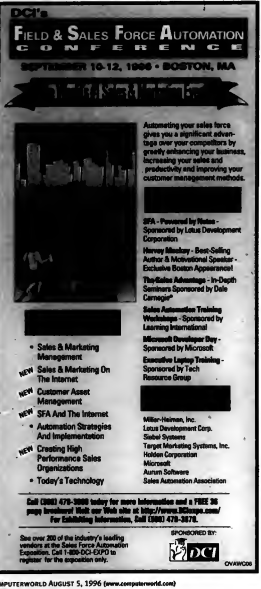
The Vectra scored high marks for operator comfort. Its low-profile, tactile feedback keyboard provided exceptionally smooth action. We especially liked "Soft Power Down," a feature that assures an orderly shutdown to minimize corrupted files and lost data that often result from switching off without first saving all open files and flushing caches.

Overall rating:
B

Overall, the HP Vectra VA Pentium Pro is a solid performer. Although it lacks bundled software and offers a modest amount of default add-ons, it delivers more than adequate speed and usability.

Our test unit lacked "LAN Remote Power-On," a feature available only on HP's higher-end XA. Based on our April 29 review of IBM's PC 750 machines, which offered a similar feature called "Wake On LAN," we suggest corporate purchasers allow that intelligent amenity to help reduce their own labor.

Millman is a writer and network consultant in Croton, N.Y.



New Products

Computer Access Technology Corp. has announced USB Host Production Tester.

According to the Santa Clara, Calif., company, the product is a manufacturing tool used to test the Universal Serial Bus (USB) ports of USB-capable motherboards and PCs as they come off the production line.

USB Host Production Tester costs $600.

▶ *Computer Access Technology*
(408) 727-6600
www.catc.com

Product short

Artecon, Inc. has introduced LynxRack DLT, a 19-in., rack-mountable, digital linear tape-drive subsystem. LynxRack DLT supports two load-sharing power supplies, two removable fans and two AC outlets. Pricing starts at $6,995. Artecon, Carlsbad, Calif. (619) 931-5500, www.artecon.com.

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IBM, Lotus at odds over adoption of OpenDoc, 44

Easy access to ODBC

Firms to ship identical database driver managers

By Dan Richman

Come this fall, developers will find it quicker and easier to write applications that access data through Microsoft Corp.'s Open Database Connectivity (ODBC) specification, according to two middleware vendors.

Intersolv, Inc. in Rockville, Md., and Visigenic Software, Inc. in San Mateo, Calif., have agreed to ship identical versions of software called an ODBC driver manager instead of the slightly but significantly different versions they ship today. The identical driver managers will implement Version 3.0 of ODBC, which is set to ship Nov. 1.

Standard path

The vendors' agreement is a step on the road to universal access of data that has been promised since Microsoft conceived ODBC in 1992.

But turning that promise into reality has been difficult.

This is largely because competing companies have implemented ODBC drivers and driver managers — the two links between an application and data — differently. Using one vendor's driver manager with that vendor's driver may work, but substituting another vendor's driver might cause the application to fail.

"Even slight semantic differences among different vendors' products can make developers bang their heads against the wall in frustration," said David Cameron, an ODBC manager at Microsoft.

Intersolv and Visigenic will use source code from Microsoft to create identical driver managers for non-Windows platforms. Previously, only Visigenic used that source code under an exclusive agreement with Microsoft. Microsoft will remain the sole supplier of Windows-based driver managers.

Dan Saathoff, an information technology consultant at BP Exploration, Inc., an oil and gas exploration company in Anchorage, Alaska, said, "This could definitely help us reduce the complexity and increase the quality of the ODBC software we turn out."

About 80% of the non-Windows driver managers used today are from Intersolv or Visigenic, according to estimates from Microsoft. The remaining 20% are still potentially incompatible with other vendors' drivers, Cameron said. Drivers from vendors besides Intersolv and Visigenic may be incompatible.

A driver manager is bundled free with each $99 driver from Intersolv. Visigenic's driver managers are included free with its $995 software-development kit, which is used to create drivers.

Need for suites starts to sour

By Lisa Picarille

Bucking conventional purchasing trends, some business users are opting for inexpensive and less bulky integrated software packages.

Integrated software packages, which are primarily aimed at the consumer market, often come preloaded on new PCs and include rudimentary spreadsheet, word processing, drawing, charting, presentation and personal organization facilities.

Most corporate desktops have hefty feature-packed suites. This is because companies want more functionality and often standardize on more traditional software suites. Suites are a collection of applications, similar to what comes in integrated packages but with more robust functionality.

Differences between the two

Each application in a suite could be sold as a stand-alone piece of software. But the software in an integrated package can't stand on its own.

Another difference is price. Most suites cost about $300, and integrated packages cost approximately $99 or come bundled free on some new PCs.

And the hefty memory requirement suites need is too high, some users said. Microsoft Corp.'s Office, which has about 90% of the suites market, requires more than 40M bytes of memory.

This is problematic because most users don't usually use all the packages in a suite, in essence wasting valuable desktop real estate.

For these and other reasons, part of Motorola, Inc.'s Phoenix-based operation recently replaced more than 1,000 copies of Office with Claris Corp.'s ClarisWorks integrated software package.

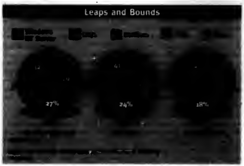
Rick Yborra, director of world marketing information solutions at Motorola, said

Need for suites, page 45

Off-the-shelf

Product	Platform supported
ClarisWorks	Windows, Macintosh
MicrosoftWorks	Windows, Macintosh
Corel PerfectWorks	Windows

Product	Platform supported
Microsoft Office	Windows, Macintosh
Lotus SmartSuite	Windows, Macintosh
Corel WordPerfect Office	Windows, Macintosh (due Q4 1996)



Source: International Data Corp., Framingham, Mass.

NT performance tools ship

By Bob Francis

Systems management vendors continue to court Windows NT users with new tools.

Landmark Systems Corp. in Vienna, Va., recently began to ship performance management tools for Microsoft Corp.'s Windows NT Server and SQL Server. PerformanceWorks for Windows NT is available now, and prices start at about $10,000, Landmark officials said.

These tools join ones from several other vendors, including BMC Software, Inc. in Houston. BMC sells Windows NT performance management tools with its Patrol software.

Paul Mason, an analyst at International Data Corp. in Framingham, Mass., said Windows NT management tools are becoming more sophisticated. They now give users detailed information on applications, performance and system utilization, compared with previous NT management tools.

"These are high-end products from the likes of Landmark and BMC that we're starting to see in the NT environment," he said.

Both vendors' products essentially place performance management tools inside Windows NT, where the tools take different kinds of performance measurements that help administrators find and fix problems. These include load

NT tools, page 45

IBM, Lotus at odds over adoption of OpenDoc, 44

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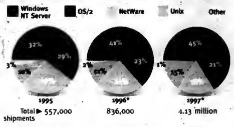
All for one

Any ODBC-compliant tool or application can access any vendor's relational database management system for which an ODBC driver has been written. ODBC substitutes for native interfaces in about 10% of databases worldwide. It serves as the native interface for some vendors' RDBMSs.

Leaps and Bounds



Note: 1995 and 1996 figures don't equal 100% due to rounding
*Projected

Source: International Data Corp., Framingham, Mass.

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Need for suites, *page 45*

Off-the-shelf

Integrated software: Low-end business productivity modules that share a unified code base and comprise a single package

Product	Platform supported
ClarisWorks	Windows, Macintosh
MicrosoftWorks	Windows, Macintosh
Corel PerfectWorks	Windows

Suites: Individual high-end business productivity applications that are sold separately or bundled

Product	Platform supported
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NT tools, *page 45*

Mapping software finds the 'net

New version of suite simplifies tasks for users

By April Jacobs

ESRI, Inc. plans to introduce a new version of its flagship desktop geographic information system (GIS) mapping suite by the fall and will unveil its Internet mapping server later this year.

The software from the Redlands, Calif., company may play well in a growing PC-based GIS market, according to Bruce Jenkins, vice president of Daratech, Inc., a market research firm in Cambridge, Mass.

Jenkins said Daratech estimates that PC-based GIS software grew more than 48% between 1994 and 1995, reaching revenue of $271 million. Helping to drive the growth were applications that are more user-friendly and business-oriented and less expensive than their workstation-based counterparts, he said.

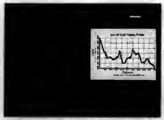
TASC's Tom Ofenstein: *With Arc View 3.0, custom GIS applications can run with those built by other developers*

Enhancements to Arc View 3.0 — ESRI's desktop suite — include a series of plug-in modules to simplify tasks. For example, the Spatial Analyst extension allows users to figure out problems — including site suitability — that require elements such as distance to be compared with road systems or property boundaries.

Similarly, the Network Analyst extension uses geographic network information to help users determine the best travel routes and run other logistical analysis.

Tom Ofenstein, a principal member of the technical staff at TASC, Inc. in Reading, Mass., is beta-testing Arc View 3.0. TASC builds custom GIS applications for organizations, including the federal government.

With Arc View 3.0, those custom applications can run with ones built by other developers, Ofenstein said. Previously, customers would need to strip and redo the extensions that allowed for GIS applications to make different software work together, he said.



Enhancements to ESRI's *Arc View 3.0 include a series of plug-in modules to simplify tasks*

On the server side, MapObjects allows users to build mapping and GIS applications that reside on a World Wide Web server. Users can access dynamic maps and data via the Internet or corporate intranet.

But some users aren't roshing to do mapping over the Internet. Scott Hutchinson, GIS coordinator at the Arizona State Land Dept. in Phoenix, said he would like to use the Internet to provide information to the public, but staffing and budget constraints won't allow it to be a priority anytime soon.

OpenDoc support an open question for Lotus

By Sharon Gaudin and Tim Ouellette

IBM wants stepchild Lotus Development Corp. to adopt its OpenDoc technology, which would give the architecture a much-needed boost from a major PC software player.

But executives at Lotus say they have no plans right now to support OpenDoc.

OpenDoc is a standard architecture for plugging together software components to create distributed applications. Lotus' products, including Notes, are based on Microsoft Corp.'s OLE.

OpenDoc is a cross-platform technology, and OLE is Microsoft-specific.

Analysts and sources at IBM said the seeming impasse could have two major effects. Some said OpenDoc will suffer a critical blow if Lotus doesn't incorporate the technology into its products. They also said if Lotus snubs IBM's request, it could lead to the first open dispute between Lotus and its parent company since IBM bought the Cambridge, Mass., software company last year.

At least one user said he cares much more about getting an industry standard than he does about Lotus backing down.

"We use CC:Mail, and I suppose [OpenDoc] might be marginally useful," said Paul Singer, a technical specialist at Southern California Edison Co. in Rosemead, Calif. "Actually, it would be nice to have a widely adopted standard instead of everybody just going off and doing their own thing."

Needs momentum

IBM, which many analysts said is basing much of its future on the success of OpenDoc, released two OpenDoc-based component packages last week. IBM, Novell, Inc. and Apple Computer, Inc. first announced OpenDoc three years ago. Apple released its first OpenDoc component, Cyberdog, in May.

A highly placed IBM source said OpenDoc is finding support throughout most of IBM's divisions and offshoots, except within Lotus. But the source, who asked not to be identified, said OpenDoc advocates plan to drag Lotus on board regardless.

Lotus executives have been clear about their opinion of OpenDoc.

Jeffrey Papows, senior vice president at Lotus, said in a recent interview, "We don't support it, and we won't support it. It is important to IBM but not to us. OpenDoc is the sequel to the movie that never aired."

Scott Heboer, manager of IBM's marketing programs for application development and object technology, said the dispute has been blown out of proportion. "We're going to have to wait and see. We believe they will come around to support it," he said.

Others said getting Lotus' support is an integral part of IBM's plans to give OpenDoc the momentum it has been lacking for several months.

"We badly need Lotus Notes and SmartSuite . . . for this technology to take off, and we are working with internal groups to make that happen," the IBM source said.

But some analysts said OpenDoc needs more than Lotus' support.

"If Lotus adopts OpenDoc, OpenDoc will still fail," said Ezra Gottheil, an analyst at Hurwitz Group, Inc. in Newton, Mass. IBM is asking Lotus "to make a fairly big architecture shift. Nobody is [adopting OpenDoc], and there's no reason they should."

Sibling rivalry

IBM has given Lotus free reign since buying the company last year, but will the debate over object standards prompt IBM to tighten the reins?

- **IBM** has been a major supporter of the OpenDoc framework.
- **Lotus** still supports OLE and ActiveX object frameworks.
- As a major player through its Notes, **Lotus'** decision will affect thousands of business partners. It may also give a boost to OpenDoc and make it a viable alternative to OLE and ActiveX.

Microsoft Office to get face-lift, more features

By Lisa Picarille

The first thing users will notice when they get Microsoft Corp.'s forthcoming Office 97 on their desktops at the end of the year is a simpler interface that cuts across all applications.

Microsoft recently continued its trickle of information about new Office features when it revealed a more streamlined interface that replaces the cluttered menu and tool bar with a tool set called the Command Bars.

The new, customizable interface offers users a higher degree of consistency across applications and fewer memory requirements.

[illegible]

Microsoft also is updating the user help system with a feature called Office Assistant.

Office Assistant's animated characters — there are nine to choose from — replace Office's Answer Wizard as the central location for online tips and advice about how to perform specific tasks.

Some users are skeptical about Office Assistant. They said it is just another attempt foist a social interface oo them, similar to Microsoft's failed Bob interface. "We're often looking for step-by-step instructions on how to do things," said Brian Moura, assistant city manager for the city of San Carlos, Calif., which has standardized on Office.

"Whether the assistant has a smiley face or a head attached to it really doesn't matter. The key is in the content. I'm not going to be dazzled by a dancing accountant in Excel if it doesn't help me do what I want to do," Moura said.

Picture perfect?

The forthcoming version of Office also will feature Office Art, a drawing program that lets users create sophisticated sketches, charts, logos and graphics using predefined shapes and effects.

Analysts said Microsoft's inclusion of a drawing program in Office is a direct response to rival Corel Corp.'s drawing package.

"Microsoft takes Corel very seriously," said Chris Le Tocq, an analyst at Dataquest, a market research firm in San Jose, Calif. "Corel has brought the value model into the suites market."

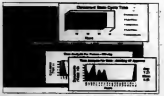
Notes workflow beefed up with heavy database

Notrix PowerFlow improves on Notes' basic capabilities

By Tim Ouellette

Another third-party developer is trying to shore up the workflow capabilities of Notes.

Percussion Software in Stoneham, Mass., which makes database integration software for Lotus Development Corp.'s Notes, is shipping Notrix PowerFlow. PowerFlow is Notes-native software that lets developers include Notes applications in an automated business process without changing the application.



Percussion's PowerFlow *gives users graphical feedback on the progress of various tasks in a work process*

For example, users could make a Notes order-entry application part of a larger process to manage a product's life cycle — from manufacturing to shipping to servicing after the sale.

Improving on Notes

Notes is a strong collaboration platform, but analysts and users said its built-in workflow capabilities don't offer much beyond basic routing of forms for approval.

Workflow software lets users automate and track the progress of work items throughout an organization. Workflow adds stronger management, scalability and integration of different applications to basic electronic-mail-based routing.

"I cringe every time I hear people say they are using Notes [alone] for workflow," said Ian Campbell, an analyst at International Data Corp. in Framingham, Mass.

But Notes' development environment provides a good potential for workflow, so users depend on add-ons to get the job done, he said.

For example, Learning Tree International, Inc. in Los Angeles, a developer of training courses, wants to use Notes as a workflow server to manage the movement of course materials between editing and publication.

With Notes alone, users have to hard-code the workflow rules into the Notes application to get the same results.

This would require constant code updates when employees leave or change positions.

"We've been trying to work it out on our own," said Kim Moriarty, a project coordinator at Learning Tree. She is beta-testing Percussion's Notrix PowerFlow. "We've been doing what we can with Notes," she said.

Campbell said he likes the combination of workflow with Percussion's database background. Heavy-duty workflow processes require a strong database component so they can manage and track everything that is going on in the process.

How it works

Notrix PowerFlow's engine runs on the Notes server, and the workflow designer and management console run on the client. Routing plans, rules and employee roles and relationships are stored in a Notes database.

The workflow rules are separated from the Notes application, though, so users can change the structure of the workflow — including the people involved, who gets what documents and when — without having to change the application.

Most other workflow add-ons for Notes run external to the Notes system.

Notrix PowerFlow costs $9,995 for the Designer, Engine and Management Console modules.

Need for suites starts to sour

CONTINUED FROM PAGE 43

ClarisWorks is "more approachable" for his users, which would allow them to "get more done and get up to speed quicker."

Yborra said the smaller memory requirements of an integrated package fit better on portable machines, which are used by about half his 1,000 end users.

Mary Conti-Lofreddo, an analyst at International Data Corp., a market research firm in Framingham, Mass., said the typical suite is huge and often isn't optimized to take advantage of today's hardware.

At least one industry watcher said this isn't a trend. "It's like saying not everyone needs a car. They can ride a bicycle," said Jeff Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass. "But the overwhelming trend is away from simple packages; most corporations keep buying bigger, fatter suites."

One Microsoft Office user said he views suites as an insurance policy.

"I may not need all the functionality of Office, but I like knowing that if I ever have to do something, the facilities to accomplish that task are already on my desktop," said Brian Peabody, director of end-user computing at Prime Consulting Group, Inc. a construction equipment company in Norcross, Ga.

More change in software buying trends is inevitable because of the Internet, another industry watcher said.

The ability to download components or pieces of software that offer specific functionality may herald the true beginning of small software.

"Eventually users will want to move to smaller, lighterweight, inexpensive pieces of software that are focused on specific tasks," said Amy Wohl, editor of "TrendsLetter," an industry newsletter in Narbarth, Pa. "I think that we are at the beginning of a next generation of simplified software."

> **"Eventually users will want to move to smaller, lighterweight, inexpensive pieces of software that are focused on specific tasks."**
>
> **— Amy Wohl, editor, "TrendsLetter"**

NT tools

CONTINUED FROM PAGE 43

balancing and CPU utilization. The information also is used for reporting, modeling and capacity planning.

Having software that collects performance information from dispersed Windows NT servers eliminates the need for users to separately log on to each Windows NT server. It also lets administrators view performance on an application basis and not just on a server basis.

For example, Medaphis Corp. in Atlanta uses Landmark's PerformanceWorks tools for its distributed Unix systems to monitor applications that run in seven regional data centers. It can view applications that run across several of the company's servers in the regional data centers.

The NT version of the tool can do just about the same thing, Landmark officials said.

Hesitant users

But not everyone is ready to move to Windows NT as a distributed application server environment.

"We've got some Windows NT servers up and running, but I'd still like to see more systems management tools for that platform before we deploy them widely," said Erik Goldoff, information systems manager at the Centers for Disease Control and Prevention in Atlanta.

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IBM beefs up server line to do battle in operating systems market, 54

Linking disparate systems makes enterprise E-mail systems . . .

A patchwork quilt

By Tim Ouellette

Closer Look
Mail integration

Patching together multiple electronic-mail systems has always been a painful task, but some users find they prefer a patchwork system to the homogeneity of standardizing on one product.

For example, the U.S. Department of Transportation monitors air, sea and ground traffic. But two years ago, the department couldn't manage internal E-mail traffic among its own agencies: It was overloaded with messaging systems.

"For the first time, our top executives in telecommunications were getting more complaints about E-mail than [about] the telephone system," said George Ramick, messaging manager at the Transportation Department in Washington.

The department opted to let each agency keep its E-mail system — at least seven different ones — and connected them using a Mail Hub server from Control Data Systems, Inc. in Arden Hills, Minn. The servers translate different message formats and maintain an X.500-based directory.

Now Ramick expects up to 75,000 users in agencies that include the U.S. Coast Guard and the Federal Aviation Administration to route messages to one another through the Mail Hub server.

Integrate or disintegrate?

Large companies have some options when dealing with many E-mail systems:

- **Install point-to-point gateways from each mail system to every other mail system**
- **Install central hubs that can route and translate messages among different systems**
- **Rip out all E-mail systems and start over with one corporate standard**

Like other organizations, the Transportation Department was dealing with a growing dependence on E-mail for corporate communications — both internal and external.

A recent report by Forrester Research, Inc. in Cambridge, Mass., estimates that 30% of all business E-mail is sent to customers and outside parties.

Legacy E-mail systems combined with workgroups that installed their own LAN-based E-mail create a dangerous mix of formats that can start to look like a faltering Tower of Babel, users said.

Varian Associates, a manufacturer in Palo Alto, Calif., used 11 E-mail systems among its worldwide offices. It took a breakdown in communications for the company to change course.

One of the final straws was that an executive vice president couldn't collect reports from his own division, said Jan McCleery, manager of information technology at Varian.

"Even if companies weren't merging and growing, the legacy E-mail systems are a source of incredible headaches," said Eric Brown, a senior analyst at Forrester Research.

"Users go through a nightmare in scaling [the systems], guaranteeing a reliable level of service and making sure there are global directories. Adding mergers and expansion, those are strong motivators to look at changing your E-mail strategy," he said.

Options aplenty

Lost or unintelligible messages, lost connections, a confusing array of incompatible directories and empty file attachments are just some symptoms of the problem.

With the improvement in client/server E-mail packages from the traditional LAN-based messaging vendors such as Lotus Development Corp. and Microsoft Corp., some firms can take the scorched-earth approach and start over (see story at right).

But many organizations want to let their groups make up their own minds about their messaging systems — either because they prefer to leave the decisions in the hands of each division or because a complete transition would be too costly in software and training costs.

The Transportation Department's George
says trying to integrate messaging systems
more than a quick fix

"We are very independent and decentralized, so we don't have the desire to push a standard [E-mail system] for just a standard," McCleery said.

That approach can place the burden on information systems staff to make a host of different systems work.

"Management thought this was a simple fix, since it was 'just E-mail,' " Ramick said. "But I knew we were not in for a quick scenario."

Internet standards such as TCP/IP and Simple Message Transport Protocol are other options to avoid the proprietary nature of traditional E-mail systems.

Varian has taken that approach and installed Qualcomm, Inc.'s Eudora Internet E-mail software for all new users. Groups that want to maintain their E-mail must install gateways to allow for smooth communications.

But analysts say the fast change of pace on the 'net could paralyze users who need to make an E-mail decision.

"Because of changes in the market, especially with the Internet, some users are holding their plans back" for new E-mail systems, said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston.

Some companies have decided that the best way to deal with too many aging E-mail systems is to delete them.

For example, The Boeing Co. in Seattle is ditching its seven E-mail packages in favor of Microsoft's Exchange Server for its 65,000 users. Atlantic Richfield Co. in Los Angeles made a similar decision recently, cutting its list of five E-mail systems to one: Lotus Notes.

Though such moves cost money in new software, training and planning, maintaining one system relieves management headaches for IS and ensures message compatibility and delivery within the system, said analysts who have seen some firms struggle with multiple E-mail systems.

And analysts say the trend will continue.

Eric Brown, an analyst at Forrester Research, said that in a recent survey, more than half the respondents considered moving their users to a central client/server E-mail platform.

Vendors that include Microsoft, Lotus, Hewlett-Packard Co., Novell, Inc. and Oracle Corp. are driving hard this year to get those customers.

The poor performance of legacy E-mail systems is driving many users away, despite the high cost and complexity of migration to new E-mail systems.

"Our IBM network topology was not scalable," said John Charalambous, manager of electronic messaging at Shell Services Co. in Houston.

Shell is moving away from its legacy and LAN-based mail systems and switching to Exchange on Windows NT servers.

But before cutting their ties with the past, companies must realize they can't implement a new system in one day.

While migrating users, IS staffers still will have to deal with having different E-mail systems communicate with the new software.

— Tim Ouellette

It takes lots of money and manpower to keep information systems running.

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ATM just the prescription for hospitals

By Kim Girard

Asynchronous Transfer Mode (ATM) sales may be sluggish in most industries, but hospitals and medical care providers are proving to be a solid niche market, increasingly adopting the technology to meet bandwidth demands.

"Hospitals have one of the more valid applications for ATM," said Tom Jenkins, a broadband analyst at TeleChoice, Inc., a consultancy in Verona, N.J.

The increasing number of hospital mergers and the growth of managed health care have led to a bloom in demand for networks that can move large amounts of data among geographically dispersed sites, he said. ATM provides transmission at speeds of up to 155M bit/sec. that Integrated Services Digital Network and other technologies can't match, Jenkins said.

One of the latest ATM adopters is Indian River Memorial Hospital in Vero Beach, Fla., which is installing an ATM backbone connecting a switched Ethernet LAN that will support 1,000 PCs.

But ATM wasn't the easiest sell, acknowledges Indian River's MIS director David Hinkle. Management, which was committed to the old mainframe ways, needed convincing before CEO Michael O'Grady Jr. backed the $1 million project, he said.

Indian River Memorial Hospital's Joe Sleeman: *'ATM is where everything is going to go'*

"I think we had a change in philosophical outlook," he said. "We got here, and it was largely a mainframe system. There were political issues of getting executive management's commitment to a new way of doing things."

Plenty of bandwidth

Once scarce and expensive, ATM products are becoming cheaper and more available through multiple vendors, Hinkle said. Also, ATM provides the bandwidth that physicians, technicians and employees at the hospital need to access and share images and patient records, he said.

"We wanted to do things once and not have to revisit some of these issues down the road," Hinkle said.

"We looked at FDDI [Fiber Distributed Data Interface] and Fast Ethernet and decided ATM is where everything is going to go anyway," said Joe Sleeman, manager of network services.

So far, Indian River has connected 14 UB Networks, Inc. GeoLan 100 hubs to the ATM backbone. Eventually, nine buildings will be connected on the network, including the hospital, an outpatient surgical care center and a cancer center. Indian River uses ATM equipment from Santa Clara, Calif.-based UB, including the company's GeoSwitch.

Richard Broomell, Indian River's engineering data management coordinator, said the new network has made his job a lot easier. Now, he can access on his PC historical information stored on the AS/400 minicomputer, which is now connected directly to the network.

Users can also easily share blueprints, computer-aided design drawings, plans and work requests among different sites, he said.

Eventually, Indian River plans to bring ATM's capabilities to the desktop.

Although ATM standards are emerging slowly, Hinkle said he is committed to the technology.

"It's tough to always wait for standards," Hinkle said. "Yon have to take your best guess, and when you can afford it, just go for it — apply the technology."

Briefs

Bright day for IMAP

SunSoft, Inc. is shipping its Solstice Internet Mail Server and joins a small list of vendors that are starting to support the Internet Message Access Protocol (IMAP). IMAP offers more flexibility to users for connecting and downloading electronic-mail messages. It is expected to be the next step above the Post Office Protocol currently used in most products. Solstice Internet Mail Server costs $995 and ships with an adapter that lets Microsoft Corp. Mail clients link to the server.

DataJoiner reaches out to DB2 users

IBM will extend the reach of its DataJoiner middleware and allow DB2 users to access data in Informix, IMS and VSAM, company officials at IBM said. DataJoiner 1.2 costs $5,000 and will add Informix support. Classic Connect driver, a $35,000 add-on to that version, will provide IMS and VSAM access. Both products are promised by Nov. 1.

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Token Ring switch market struggles for growth

By Bob Wallace

If Token Ring switching is going to soar, switch vendors need to cut prices, offer high-speed uplinks to backbone networks and make the technology more appealing to non-IBM shops, users and analysts said.

Although tried-and-Blue firms are staying loyal and migrating to Token Ring switching instead of switched Ethernet, industry experts have said the rest of the user community isn't taking a bard look at Token Ring switching.

Users said that is because they need more capacity now, and they like the much lower prices of switched Ethernet and the smooth migration path: switched Ethernet to Fast Ethernet to gigabit Ethernet. Token Ring switch users have to go to Asynchronous Transfer Mode (ATM).

Shipments of Token Ring switch ports have been steadily increasing (see chart), but some analysts say the technology faces an uphill climb.

"Sure, there's pent-up demand for it from the installed Token Ring customer base, but I don't see Token Ring switching being implemented much elsewhere," said Esmerelda Silva, a senior analyst at International Data Corp., a research and consulting firm in Framingham, Mass. "I don't see any 'new' customers."

Token Ring switch port shipments

COMPANY	Q1 1995	Q2 1995	Q3 1995	Q4 1995	Q1 1996
Bay Networks	400	1,200	3,200	6,400	7,500
Cabletron	NA	NA	1,000	2,400	3,100
Xylan	NA	NA	NA	300	300
TOTAL	900	1,300	7,100	13,700	20,700

Source: The Dell'Oro Group, Menlo Park, Calif.

Token Ring switching lets information systems managers boost performance by breaking large Token Ring LANs into subnetworks and/or consolidating many Token Ring LANs into one high-speed ring. That performance was enough to sell First Health Corp. on Token Ring switching.

"We had eight rings with about 130 nodes apiece, and performance was poor at best," recalled Randy Kitchens, a technical consultant at the Glen Ellen, Va., firm. First Health was among the first to implement Token Ring switching. "The increase in performance was so great that after the switch evaluation ended, and we went back to our old network, we had permission to buy the switch one day later," be said.

First Health used a switch from Centillion Networks, Inc., which was bought by Bay Networks, Inc.

"The switch has never given us a problem, and it took only a half-hour to install," Kitchens said. "And the Centillion 100 was the only Token Ring [system] that could support ATM between switches."

Looking for links

But there's more to Token Ring switches than ease of use and the performance boost.

Users are looking for vendors that offer a variety of high-speed uplinks with the switch. Those links will let IS managers tie Token Ring switches to backbone networks.

"This is a top user requirement that can't be ignored," said Tam Dell'Oro, president of The Dell'Oro Group, a consulting and research firm in Menlo Park, Calif. Flavors of high-speed uplinks include Fast Ethernet and Fiber Distributed Data Interface (FDDI) at 100M bit/sec. each, and ATM at 155M bit/sec. and up.

"Vendors frequently don't ship them for at least several months [after the product first ships]," Dell'Oro said.

Also high on users' requirements lists are pricing and the ability to expand the switch to support more ports.

"We look at the cost of the switch right off the bat," said Richard Jackson, a systems engineer at WorldSpan, a travel reservations firm in Atlanta. He agreed with Kitchens that options for linking Token Ring switches is a top priority. He said be is looking for a box with an FDDI uplink.

WorldSpan is in the early stages of evaluating a switch. For now, the firm sees these switches as a higher performance alternative to routers for linking many 4M and 16M bit/sec. Token Ring LANs.

New Product

RAD Data Communications, Inc. has announced RAD Maxcess-3000, a high-performance packet-switching bandwidth manager that integrates multiprotocol data, voice and fax over frame-relay or leased lines.

According to the Mahwah, N.J., company, RAD Maxcess-3000 is a high-capacity card nest that holds up to 12 system and I/O modules. Each port was designed to function as a trunk port or an I/O port. Any combination of I/Os can be configured in the same card nest. It supports up to 36 voice/fax channels at rates up to 384K bit/sec. Modules can be inserted and removed while the unit is operating.

Prices start at $3,900.

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Look before you leap from NetWare to NT

Raj Sundra

In their rush to migrate to Microsoft's Windows NT Server, many companies plan to replace their Novell NetWare servers without examining the differences between the roles played by a network file server and a database application server.

This might be shortsighted, given that NT Server has some limitations from the networking perspective.

NT Server's strength is in database applications. NetWare shines in networking.

Companies planning such a switch should consider several things. First, implementing NT Server with existing PCs that run DOS or Windows 3.1 usually means upgrading to Windows 95 or NT Workstation and dealing with hardware conflicts and other connectivity issues all over again.

This deja vu isn't appealing. It's easier to keep NetWare servers and clients as they are and upgrade workstations that have to connect to an NT Server as needed.

Database administration and/or systems administration tasks are also a concern for organizations that are implementing NT as an application server.

In most NetWare shops, different groups handle network management and database administration. With NT Server, those roles are being combined.

In the days before NT, there were systems administrators, but primarily in the Unix world. Now, with the emergence of NT-based application servers, a new functional responsibility appears to be evolving in non-Unix shops — that of systems administrator.

Unlike the network administrator, who typically had little to do with databases, and the database administrator, who had little to do with networks, the systems administrator gets involved with network components and operating systems, server installation, management and configuring database applications on the server. Some knowledge of relational database management systems concepts and SQL is required to carry out those responsibilities — but it isn't quite as extensive a requirement as that of database administrators.

Also, "tuning" NT Server for optimum performance isn't a simple matter. Network administrators from the old NetWare school have a steep learning curve in adapting to NT.

The clerical-level NetWare LAN administrator of the past probably will have his responsibilities relegated to the help desk or perhaps to just another power user.

Enterprise network management issues are also becoming a significant concern for organizations migrating to NT Server.

Limitations in WANs

Where wide-area networks (WAN) with hundreds of servers are concerned, NT domains have some limits compared with Novell Directory Services (NDS). NDS lets users maintain a single log-on to access servers worldwide; similar access in an NT network requires a complex mesh of trust relationships among various NT domains to allow users in one section of the network to access servers in other areas. Microsoft won't solve the domain problem until its Cairo release of NT sometime next year or in 1998.

Adding new users en masse is easier in NetWare because of utilities such as Makeuser and Uimport. These allow large numbers of user accounts to be imported from text files in a human resources database, for example. Graphical user interfaces are groovy, but batch files are far more productive when you have to perform the same task over and over again. NT Server supports batch files to a certain extent, but the process of importing users is more complicated, especially in large groups.

Perhaps NetWare will become a legacy, but given that it does some things well — file and print services — I bet that it will be around for the long haul in most environments.

Sundra is network technologist at Info Mart Technologies, Inc., a Stamford, Conn.-based provider of consulting and implementation services.

IBM grows server line, has Microsoft in sight

By Laura DiDio

Users and analysts predict that IBM's beefed-up Software Server lineup will generate strong appeal among the installed base, but it will have a tough time attracting new customers.

The latest addition to IBM's server family is the Directory and Security Server (DSS) for OS/2. It will ship this month.

DSS for OS/2 provides a scalable directory and ensures users of secure Internet access. DSS for OS/2 is the latest offering in the ever-expanding family of servers that IBM is using to battle Microsoft Corp.'s BackOffice suite.

Worthy opponent

Analysts and users said Big Blue's lineup now rivals Microsoft's suite in terms of groupware, transaction processing, database, systems management and World Wide Web access features.

All seven IBM servers are available for OS/2, OS/2 Warp and AIX platforms. IBM has also expanded its support for Microsoft's Windows NT environment.

Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, said IBM's aggressive product shipments are part of an overall strategy to boost momentum for its operating systems in the increasingly competitive operating system and network operating system markets.

Warp drive

There are 750,000 OS/2 Warp Servers installed worldwide, according to IBM.

Dzubeck said IBM has all the technical goods to make a horse race out of it — including the bundling of Notes and the leading-edge voice and speech recognition features that will be built in to the next version of OS/2 Warp, code-named Merlin.

"Now they must overcome the public perception that the [network operating system] and server software wars are over and [that] Microsoft is the clear and only winner," Dzubeck said.

Longtime OS/2 user Jess Hurwitz, vice president of technology at Parallel Storage Solutions, Inc. in Elmsford, N.Y., said although his organization has a mixed environment that includes OS/2 Warp, Windows NT and Novell, Inc.'s NetWare, it won't abandon the IBM server platform.

"OS/2 Warp Server is a very stable environment, much more so than Windows NT Server at this point. And we're really looking forward to deploying the DSS Server — it gives us much-needed directory services capability," Hurwitz said.

Parallel Storage will also use the DSS security capabilities. "Many of our users are now routinely accessing the Internet. That will only increase with time, so we just can't afford to have any breaches," Hurwitz said.

IBM for the past several months has been bolstering the feature set in Merlin and its OS/2 Warp Server products.

Ready for prime time

Merlin initially was slated to debut in September but will ship later this month, according to sources close to IBM.

Ray Pratts, senior technical analyst at Variable Annuity Life Insurance Co. in Houston, a beta-test site for Merlin, praised the communications facilities of the operating system that let him connect "effortlessly" to servers running NetWare and AIX.

Server suites

But Pratts lamented that there aren't enough mainstream applications out there yet for OS/2 Warp.

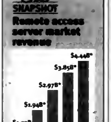
"If it's going to be a mainstream product, IBM has to get [independent software vendors] to develop more applications," he said.

"That's the crux of IBM's problems," agreed Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass.

"The technical enhancements to the OS/2 Warp platform and the server suites are great stopgap measures for the installed base," Oltsik said. "But without a wide range of applications, IBM can never hope to challenge Windows NT or NetWare."

SNAPSHOT

Remote access server market revenue



*Projected

Source: International Data Corp., Framingham, Mass.

Briefs

Fax and figures

Teubner & Associates, Inc. in Stillwater, Okla., has added support for Hewlett-Packard, Co.'s OpenMail electronic-mail system to its Faxgate faxing software.

Bay boosts monitors

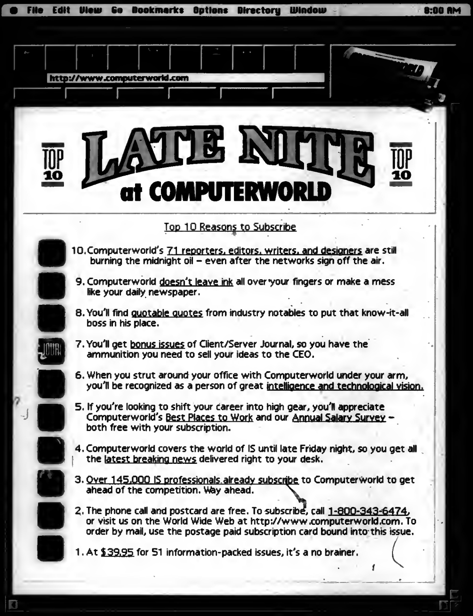
Bay Networks, Inc. in Santa Clara, Calif., has beefed up its Unix-based network management software with two tools. Optivity Analysis 7.0 provides Remote Monitoring traffic analysis. It costs $5,995. Optivity Planning 7.0, due next month, tracks performance changes and helps model network designs. It will also cost $5,995.

Unix ware released

Digital Equipment Corp. in Maynard, Mass., recently released Pathworks 6.0 for Digital Unix. The software provides Windows NT networking services on Digital Unix.

IBM's net protection

IBM in Armonk, N.Y., has introduced Network Recovery Service, which protects and recovers customers' high-speed networks. The service covers all U.S. states and relies on a Synchronous Optical Network to link customer locations with IBM recovery facilities.



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The Internet

Tough firewalls help users avoid getting burned, **58**

[illegible]

Mitch Wagner

Microsoft, Netscape trade shots; IS caught in the middle

Browser wars

By Kim S. Nash

While Netscape Communications Corp. and Microsoft Corp. joust over whose World Wide Web browser supports the most HTML, messaging and multimedia features, IS is looking at a much bigger picture.

And the picture isn't pretty.

No longer do information systems managers wonder whether Microsoft will be an Internet force. Today the question is whether, in their battle to win the war for the Web, Microsoft and Netscape will box users into separate, incompatible corners.

That prospect scares Internet enthusiasts who know the worldwide network was built on cooperation, not competition.

"It's too bad they can't get together and agree on a standard," said an IS executive responsible for intranet projects at a large retailer. "It's to [the point] where you have to drive a stake in the ground and live with consequences. That's what we rebelled against for years with IBM."

COMPUTERWORLD ANALYSIS
Internet browsers

For example, although they support some of the same Hypertext Markup Language (HTML) features, Netscape and Microsoft have extended HTML in proprietary ways. Web pages written for Netscape's Navigator don't look the same under Microsoft's Internet Explorer, and vice versa.

"The arguing you see between them makes it difficult to figure out what exactly is going on in terms of features supported," said Chris Howell, a webmaster at Centura Bank in Rocky Mount, N.C.

Microsoft and Netscape agree that the browser is the user interface of the future. But users wonder why they can't simply flit at will between Navigator and Internet Explorer or, barring that, commit easily to one or the other.

For example, as much as it wants to, a large Southern California water company that is an all-Microsoft shop can't standardize on Explorer. The company's installed base of Windows for Workgroups 3.11 users can't use the latest version of Explorer; it runs only on Windows 95 and Windows NT.

Scholl Guin, a webmaster at the utility, said Microsoft told him that "support for Explorer 3.0 under the 16-bit platform was predicted to be released by December, with the qualifier that a lot of the neat things being done on Explorer 3.0 are really meant for a 32-bit operating system.

"I'm sure we will choose Navigator," he added.

Fast and furious

The pace at which Microsoft and Netscape ship new versions — every three to six months — has some IS managers unnerved.

Companies with thousands of users simply can't install the new products or develop

Browser wars, *page 58*

Look for the NCSA label

Organization certifies Web sites that meet minimum security specifications

By Gary H. Anthes

The National Computer Security Association (NCSA) last week began offering a seal of approval for secure Web sites.

Web security

NCSA certification will provide assurance to World Wide Web users and site providers that sites meet minimum security specifications. For example, it will assert that a site is protected by a firewall or other mechanism against attacks from the Internet.

The certification will provide a handy security checklist for Web managers, said Steven H. Haase, a senior vice president at Hamilton-Dorsey Alston Co., an insurance brokerage in Atlanta.

"There are many site [managers] who won't realize what they are doing wrong until they see [the NCSA's] requirements," he said.

To get certified, an organization must submit to remote tests and a site visit by the NCSA, based in Carlisle, Pa. Certification, at a cost of $8,500, will be good for one year, during which the NCSA will perform random compliance audits.

Bank on it

Security First Network Bank, an electronic banking service in Atlanta, will seek certification to show customers that their electronic transmissions — and the bank's systems and databases — are protected, said Michael S. Karlin, the bank's president and chief operating officer.

Seal of approval

- Protect against Internet attacks
- Maintain detailed logs of connections and attempted connections
- Encrypt sensitive data transmissions
- Inform users, in advance, if any user data is to be [illegible] by the Web server
- Protect the Web server by using various physical and logical security checks, such as passwords

"We offer our customers a no-risk guarantee, and we are insured by federal regulators. But there are still some that are nervous about banking on the Internet," Karlin said. "An NCSA certification icon will demonstrate the fact that we are security-conscious."

NCSA President Peter Tippett said the certification program could stimulate Web commerce by making users feel more secure.

"No single vendor or product can address the global problem of security on the Internet," Tippett said. "But certification of Web sites will lead to a significant reduction in risk as well as an improved perception of security across the 'net."

Tippett conceded that the certification offered assurance of only a minimal level of security but said it would at least tell users that the basics hadn't been ignored.

Tough firewalls help users avoid getting burned, 58

http:

Windows 95 utilities

Microsoft Corp. CEO Bill Gates likes to talk about PCs that will recognize spoken commands and use video input to monitor facial expressions. But for now, we're stuck with the Windows 95 interface, which you can talk to and make faces at all you want, but it won't run any better. Fortunately, the Internet can help.

● Windows 95 is like an insecure spouse, always asking if you really meant what you said. The free RtvReco utility, from RTV Software in London (**www.demon.co.uk/rtvsoft/**), offers an automatic way to say, "Yes, dear." Program in the title of a window, and when it pops up to ask you, "Are you sure you want to do something?" RtvReco will automatically click the "Yes" button.

● RAS+ 95, from Lamb Software, Inc. (**www.lambsoftware.com/**), automates Win 95's Dial-Up Networking to establish an Internet connection over the phone. When you create a list of phone numbers, RAS+ 95 will dial those numbers in sequence until it gets a good connection. Without RAS+ 95, you have to dial numbers one at a time. RAS+ 95 is priced at $29.95.

● Microsoft itself offers a few freeware Windows 95 interface add-ons, called PowerToys, at **www.microsoft.com/windows/software/powertoy.htm**.

● You can find tips for tuning Windows 95 networking and improving the user interface – including pointers to these and other useful software utilities – at **www.creativelement.com/win95ann/**. The site, called "Windows 95 Annoyances," is from Creative Element.

– Mitch Wogner

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Tough firewalls help users avoid getting burned

By Gary H. Anthes

Firewalls are changing as fast as the Internet in order to keep up with new threats and changing usage patterns. Recent releases offer improved usability, audit tools, multiprotocol support, protection against malicious Java applets and more.

Users generally praised the new features. Ed Green, a network analyst at The Thomson Corp. in Stamford, Conn., said he used the new audit capabilities in ANS's InterLock firewall to identify 30 non-work-related World Wide Web sites that employees visited regularly. "We introduced a company policy that makes non-work-related graphics unacceptable," he said. "Now we're using the [Web address] filtering to block access to those sites."

'net access

Because firewalls attempt to mirror often-complex user security policies, they can be tricky to set up and unforgiving of errors. So vendors' efforts to simplify use are a welcome trend, said Bill Morgan, a staff consultant at The Dun & Bradstreet Corp. in Berkeley Heights, N.J.

Too easy?

But Morgan warned of a potential downside to easy-to-use tools. "Now the people that administer the firewalls don't have to understand as much as they used to," he said. "So it's dangerous because now you might tend to push responsibility down to too low a level."

In the past several weeks, the following companies have released Internet security products:

- **Trusted Information Systems, Inc.** in Glenwood, Md., announced Version 3.2 of its Gauntlet Internet Firewall. It blocks Java applets from attacking corporate hosts and can be managed from a central site. It also has the ability to encrypt communications among remote users and the corporate network.
- **Raptor Systems, Inc.** in Waltham, Mass., introduced new versions of its Unix- and Windows NT-based Eagle firewalls. Eagle 4.0 for Unix offers encryption to secure data that travels over a public network. It also allows users to restrict specific Internet Protocol (IP) applications, such as Telnet, from passing over virtual private networks.
- **Network-1 Software & Technology, Inc.** in New York said its FireWall/Plus 2.0 filters IP packets and can block other protocols as well. Company officials said this feature is important for protecting the network from employees on the inside, where non-IP protocols abound.
- **ANS**, an America Online, Inc. company in Elmsford, N.Y., added auditing and reporting tools to its InterLock firewall service. ANS also added a filter that allows administrators to block access to particular Web sites and the ability to block the import of Java applets.
- **Seattle Software Labs, Inc.**, an Internet security start-up in Seattle, announced a firewall aimed at smaller organizations that want simple, inexpensive protection. The $2,995 software/hardware combination employs expert rules to help ensure error-free setup, and it produces alerts and reports of suspicious events.

Source: Dataquest, San Jose, Calif.

Rik Farrow, an independent Internet security consultant in Sedona, Ariz., said firewalls can become too flexible and invite administrators to cave in to every demand for Internet access by end users.

He said that as companies turn to firewalls to protect multiple intranets from employees, features that allow centralized management of remote firewalls are becoming important.

'net provider 'sort of' commits

CONTINUED FROM PAGE 1

goals. Officials at ANS' competitors, including AT&T Corp. and PSInet, Inc., said they are working on written quality-of-service commitments, but their standard service contracts currently make no such promises. Officials at UUnet Technologies, Inc. said it plans to announce quality-of-service guarantees this month but declined to provide specifics.

ANS' commitments are also limited in that performance tests to measure whether the company has lived up to its commitments are done with ANS' own equipment, run by ANS' staff. And ANS is the final judge of whether the service commitments have been met. Moreover, the commitments apply only to ANS' equipment, which includes its internal backbone and a Cisco Systems, Inc. router on the user's premises.

A good start

ANS deserves credit for taking a significant first step, said Eric Paulak, an analyst at Gartner Group, Inc. "They've got the pieces. It's a start. What ANS is doing here is setting the standard that the other [Internet service providers] will have to follow," he said.

But for truly rigorous guarantees, Paulak said, a user will need more — a guarantee of end-to-end connectivity, not just connectivity from the user premises to the provider's backbone. Users will need guarantees regarding delay time — not just promises that the signal will get through, as ANS provides now, but also statements of how long it will take for the signal to get through.

Even with the limits, the ANS commitments are useful, said user Shawn Kreeloff, director of corporate information systems at Bertelsmann, Inc. in New York. They provide a benchmark against which to measure ANS' performance. He said Bertelsmann has been pleased with ANS' service, but if that changes, the commitments can be used as leverage to get better service.

"They're measuring their network; I'm measuring mine, too. If I decide there's an issue with throughput, they have to prove to me there isn't. And if I'm not happy with the service, that's one of the items I can use to terminate the contract," Kreeloff said.

In addition to its commitments, the Elmsford, N.Y., company also offers service goals. Company officials said ANS will try to deliver response times of 70 msec or less between any two points on its backbone network — although that doesn't say how long it will take signals to reach the user premises. Likewise, ANS will try to deliver "port speed access," so that if a user pays for a 10M bit/sec. line, for instance, the user will receive 10M bit/sec. throughput at all times. ANS won't be penalized, however, if it doesn't meet its performance goals.

ANS is one of the dozen or so biggest Internet providers in the U.S. that are generally referred to as the backbone providers of the Internet. It is one of about 100,000 interconnected networks that compose the Internet. ANS has a 45M bit/sec. network that stretches across the continental U.S. and covers Hawaii. Comparable Internet backbone networks include those of AT&T, PSInet, UUnet and MCI Communications Corp.

ANS' performance promises

- 99.5% availability of its Internet-based wide-area backbone network.
- 99.5% availability of Web sites hosted at ANS.

- $2,800 base price for network service over a T1 connection with encryption.
- $2,500 base price per month for Web hosting.

- Web hosting: ANS will provide one week of free service or refund one week's payment.
- Network service: ANS will provide one day of free service or refund one day's payment.

A race for quality

ANS is first out of the gate in a race to give users commitments on the quality of service they can expect in 'net connectivity.

But ANS won't be alone for long. Officials at all the major Internet service providers said they plan service guarantees, and experts expect to see those materialize by year's end.

In May, officials at BBN Planet in Cambridge, Mass., said it is negotiating with major Internet providers, including MCI, PSInet and Sprint Corp., to provide service guarantees for customers of the companies.

And last week, PSInet officials said it is developing plans to offer service guarantees for consumer Internet accounts. [illegible] terms, [illegible] to consumers.

— Mitch Wagner

Browser wars

CONTINUED FROM PAGE 57

intranet applications for them that fast, users said.

Doug Hartman, an IS vice president at Citibank Corp. in Reston, Va., criticized Netscape to Jim Barksdale, the vendor's CEO, at a recent *Computerworld* conference [@Computerworld, June 25]. Poor notice from Netscape about its fast-paced release schedule interferes with IS project planning, Hartman said.

No winner

Neither Netscape nor Microsoft will win the browser war, said Thomas Koulopoulos, president of Delphi Consulting Group in Cambridge, Mass.

In a recent survey of 400 companies, Delphi found that 20% said Microsoft's browser will be standard, and 10% favored Netscape's. Regardless of whether those particular figures pan out, what is significant is the other 70% that said they will use something as yet unknown.

But until that happens, IS wants to avoid the pitfalls of developing that arise when using two incompatible browsers — regardless of what Netscape or Microsoft wants.

Virginia builds broadband networks to boost aducation, attract business, 60

It's not rocket science

Design tool promises reduced consulting fees

By Julia King

Many companies building new client/server systems start by shopping for outside experts with architectural, network and application development expertise.

Now, Client/Server Connection Ltd. in Mount Kisco, N.Y., is packaging all three in CS/10,000, a $10,000, first-of-its-kind system design tool that could save users tens of thousands of dollars in consulting costs.

Client/server

Based on expert system technology, CS/10,000 contains a series of automated, intelligent questionnaires, whose answers generate custom methodologies for building new client/server systems.

For example, the first questionnaire gathers users' business and technical requirements. With this information, the system issues a choice of appropriate architecture and network blueprints from its inventory of more than 125 designs.

From there, users can drill into a 3,000-item repository of development, middleware and networking products to complete the plan.

In short, the tool antomates many design tasks that companies now look to consultants to perform, said Richard Hunter, research director at Gartner Group, Inc.'s application development and management practice in Stamford, Conn. "It gives companies a way to build a project plan on something besides their own experience without having to invest in a critical mass of skilled experts," he said.

System integrators and Big Six companies have had methodologies on the market for years. What makes the CS/10,000 methodology unique is that it doesn't take an expert to implement it, Hunter said.

Based on responses to subsequent questionnaires, the system also calculates project costs, generates project plans — including detailed task lists and project milestones and deadlines — develops requests for proposal and calculates an estimated return on

Design, *page 60*

Bolero speeds up trade

By Ken Cottrill

The paper mountain that makes up international trade may finally begin to shrink, thanks to Bolero, a multinational project being spearheaded by some huge corporate players, including Union Bank and Citicorp.

More than $210 billion goes toward the processing of international trade documents annually. Bolero, based on electronic data interchange (EDI) technology, aims to convert many of these paper documents to electronic transactions that are verified by an international registry of documents.

The Bolero Association, London

Phone: 44-171-378-1171

E-mail: 100277221 7@compuserve.com

The group is spearheading the adoption of an electronic means to exchange trade information.

"According to U.N. figures, it takes on average 20 documents to move goods from the buyer to the seller," said John McKessy, North American representative of the Bolero Association and vice president of the U.S. Council on International Banking.

As this occurs, the exports and imports hit speed bumps. Cargoes languish in warehouses when clearance documents are held up, and late letters of credit disrupt cash flows.

Bolero is based on a central registry of electronic trade documents to which members — including exporters, importers, freight forwarders, carriers and banks — have direct access. Users may transfer ownership of goods via the central registry, which verifies the details. In effect, Bolero is a club whose members agree on the rules that govern the flow of documents among them.

Bolero, *page 60*

... and Internet access for all

By Patrick Dryden
PHOENIX

Information technology professionals here in the heart of Arizona have donated their time, expertise and network bandwidth to open up the Internet to anyone who wants access.

They help maintain a nonprofit organization called Arizona Telecommunication Community Computing (Aztec), which provides free access to local and state information, discussion groups, Internet electronic mail and links from terminals in libraries and other sites.

"We're filling a gap for those who don't have the technology at home or maybe don't even have a home," said Derwin Skipp, a systems programmer at Arizona State University in Tempe.

Skipp helped local United Way agencies computerize their operations before volunteering to babysit a donated server that hosts Aztec.

A few hours a month is all it takes, he and others said.

"Our university charter calls on us to support the community."

Joe Askins
Arizona State

Share the wealth

"It almost sounds corny, but I believe the Internet can only be truly democratic when everyone can share the information and the power," Skipp said.

This Phoenix-area community service network is based on the Free Net goals and software created by the National Public Telecommunications Network in Cleveland. That project sought to make information available publicly. About 100 Free Nets operate in North America. But unlike other Free Nets, Aztec now reaches statewide and is free to residents.

The state library has donated $50,000 to fund Aztec, and Digital Equipment Corp. and AT&T Corp. supplied the initial server and Free Net software. Cisco Systems, Inc. donated a communications server, Arizona State shares its statewide network backbone capacity and many unsung heroes recycled their old PCs and modems after upgrades.

"Our university charter calls on us to support the community. So we spare some bandwidth and loan old computers to halfway houses and agencies to equalize Internet access," said Joe Askins, Arizona State's director of data communications and an Aztec founder.

Trying to close the gap

Internet demographics show most users to be affluent and college-educated, a profile attributable to the high cost and limited availability of access.

That user profile holds true despite efforts of online services and competition among Internet service providers, said Bill Austin, program manager at Motorola Space and Systems Technology Group in Scottsdale, Ariz., and an Aztec director.

"This is a critical way to close the gap between the haves and have-nots," Austin said.

Residents of Arizona's retirement communities can provide their insight through Usenet discussion groups "to feel useful and more valuable," Austin said. Members can search for jobs, contact prospective employers via E-mail and learn about a company from its World Wide Web page prior to an interview.

The underprivileged and homeless can find resources and participate in the evolving job market, said Mark Goldstein, president of International Research Center, a telecommunications researcher in Tempe. "You can't be a player in the modern world without E-mail."

State's broadband net promises better access

Virginia hopes to attract businesses

By Kim Girard

The Commonwealth of Virginia is joining a small but growing group of states building high-powered broadband networks to improve their schools, increase their competitive edge and lure business.

The state recently inked two seven-year contracts with Sprint Corp. and Philadelphia-based Bell Atlantic Corp. They were chosen over rivals AT&T Corp. and MCI Communications Corp.

Sprint is providing long-distance access via a Synchronous Optical Network backbone. And Bell Atlantic's Asynchronous Transfer Mode (ATM) service will enable users to transmit voice, data and interactive video simultaneously on the network.

"They offered us the best service at the best price," said Patricia Jackson, external programs director of information systems at Virginia Polytechnic Institute and State University in Blacksburg, Va. Jackson served as evaluation committee chairwoman during contract negotiations for the project — Access Virginia.

Networks' mainstay

Joseph Baylock, a vice president of research at Gartoer Group, Inc. in Stamford, Conn., said states that have built similar networks typically use community colleges to anchor the project.

"Community colleges pick up distance-learning traffic that helps them fill the network," he said.

Under Virginia's contract, community colleges and schools, state and local government agencies and law enforcement offices, libraries and other institutions can buy high-bandwidth network services to meet their needs.

All 38 community colleges within the state's system should be hooked up to the network by year's end.

Interacting live on the network, music students at Virginia Tech can participate in a music course at Old Dominion University, sharing compositions or criticism. High school advanced placement students can take college classes without leaving their school and share homework assignments over the Internet with students in other towns. And state agencies can use the network to enhance training in remote locations and track data and personnel files.

The network could help lure businesses to the state by bringing better telecommunications services to remote areas, said Robert Skunda, Virginia's secretary of trade and economic development.

Key to the deal was that each telecommunications company was willing to charge flat rates to users hooking up to the network instead of charging per mile, Jackson said.

That means no matter where a user hooks up to the network in the state, use is unlimited and includes high-speed Internet access and teleconferencing capacity.

Superhighway offerings

Virginia's broadband network will offer community colleges, state agencies and other institutions a superhighway that will provide the following:

- Access to ATM, which provides up to 155M bit/sec. bandwidth to move video, data and voice on the same lines.
- Flat fees that are consistent throughout the state and aren't sensitive to usage.
- High-speed Internet access and the ability to do real-time videoconferencing.

— Kim Girard

Bolero

CONTINUED FROM PAGE 59

Ake Nilson, director of Marinade Ltd., an electronic commerce consultancy in London, said Bolero can work with whatever computers trading partners use.

"It's a true EDI system," he said. Discussions are under way with EDI software suppliers to incorporate Bolero into existing packages.

"It's a risk minimizer," said David Godfrey, who heads the Bolero project at Elf Trading, a Geneva-based oil company. In the oil industry, there can be 20 or more parties in the buying chain. Relevant documents are sent to the first buyer on the list, who has to physically endorse it before sending it to the next party via mail or courier.

"The benefits [of Bolero] are better quality, lower cost, faster turnaround and less risk," said Jim Wills, senior vice president of Union Bank in Los Angeles. Union Bank is participating in Bolero on all levels, he confirmed. Citicorp is another U.S. bank involved in the project.

Past attempts to try this have failed. One problem has been the sensitivity of the information being exchanged among trading partners.

To combat this, "Bolero is a central registry that is controlled by all of its users together," Nilsoo said. "At least you can trust yourself."

The project began in Europe in 1994; it has since gone international. Its backers claim Bolero will automate about 80% of all shipments it tracks.

A pilot test was carried out last July and August, during which consignment data was exchanged electronically among trading partners United Distillers in the U.K., shipping company Maersk Line in London and United Distillers in Stamford, Conn.

The project is welcomed by Michael Baum, vice president at Verisign, an electronic commerce security consultancy. "It could accomplish what has been considered the Holy Grail of electronic commerce, which is to facilitate the negotiation of instruments electronically," he said.

Even so, Baum warned that Bolero still has to prove that it can implement a system that is readily accessible to businesses. If it becomes burdensome, he pointed out, it could fail.

Ken Cottrill is a writer in Yardley, Pa. He can be reached at Kencott@aol.com.

Design

CONTINUED FROM PAGE 59

system investment.

"It's a complete methodology in itself," said Monty Mohanty, director of business technologies at CNA Insurance Co.'s $1.7 billion personal lines division in Chicago.

Mohanty's group used the tool to plan and build a new client/server architecture, which now supports a policy management system, data warehouse application and automated underwriting system.

In doing so, CNA saved "several hundred thousand dollars in consulting costs," he said.

The U.S. Air Force used CS/10,000 to help plan, develop and deploy a client/server finance and budgeting application with 6,000 users worldwide.

Before, system plans were based on the collective experience and knowledge of various people. As such, they were vulnerable to human oversights and errors, said Capt. Roger Moon, chief systems architect.

"One of the main benefits you get [with CS/10,000] is a set of processes to follow and a number of tasks that you know if you complete, you'll have something up and running," he said.

Briefs

Microsoft offers empowerment to the Mac people

Users of Microsoft Corp.'s Macintosh products should watch their mail for a free software bundle that includes the latest update of Word for the Macintosh, the Internet Assistants for Word and Excel, the newest release of Microsoft's Internet Explorer browser for the Macintosh and a newly released version of Apple's 7.5.3 system software.

Dave Meltzer, Microsoft's group product manager for Macintosh Applications, said the Redmond, Wash., software giant just "wanted to do something nice for its Mac users." Sources close to the company speculated that the Microsoft Empowerment Pack for the Mac, is a move to placate Mac Office users who won't get a revised version of Office until next summer.

The Windows version of Office 97 is due out by year's end. Microsoft declined to comment on when Mac Office 97 would be available.

The company has already pressed 500,000 Empowerment Pack CD-ROMs to be sent out to users in the U.S. and Canada. Microsoft officials estimate there are more than 7 million Mac Office users worldwide. Mac Office users can call (800) 469-6520.

Such a deal from HP

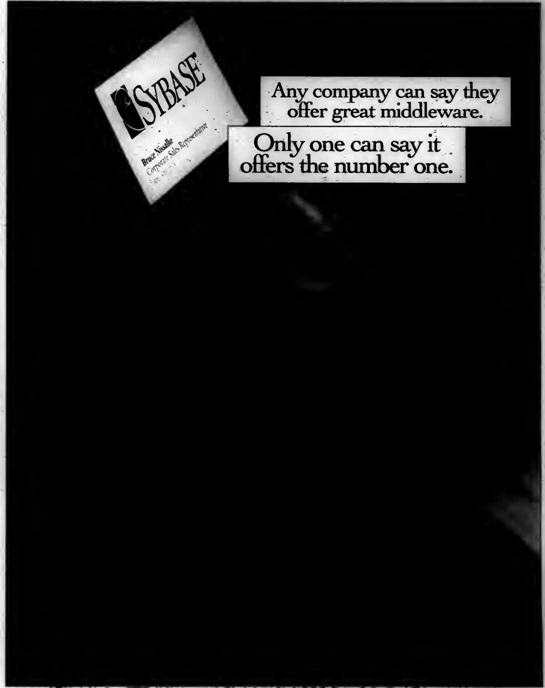
Hewlett-Packard Co. in Palo Alto, Calif., is adding a new twist to selling PC servers. Until Oct. 31, companies that purchase two HP NetServer LS/2 or LS/4 servers will receive a five-incident HP SupportPack LAN Support Service free, and those buying 10 of the servers will get two free days of on-site consulting from HP.

Resort management

Premier Resorts International in Steamboat Springs, Colo., has selected Stowe, Vt.-based Springer-Miller Systems' SMS/Host property management systems to run central reservations and manage its 34 properties in Sun Valley, Idaho, and other resort locations.

Data collection pact

Cleveland-based Collaborative Clinical Research, Inc. and IBM's Integrated Systems Solutions Corp. subsidiary have signed a 10-year alliance to develop and market an electronic data collection and project management system for use in clinical health care trials.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WATCH THE MONEY!
Paul Strassmann says corporate America's increasing thirst for information technology requires new thinking about IT spending. Page 64.

TiMiNg *is* EvERYtHiNg

To react more quickly to market trends, companies are LINKING their DECISION-SUPPORT and OPERATIONAL systems. But it's a struggle.

By Robert L. Scheier

When Hallmark Cards, Inc. ships a truckload of party goods to a supermarket or drugstore chain, it's not just business. It's test time.

If a store orders *The Hunchback of Notre Dame* party plates and the movie is released June 21, "... I need all the stock I ordered, and I need it in my store when the movie hits the theater," says John Flagler, an information technology manager at Hallmark in Kansas City, Mo.

Ninety-nine percent of the time, Hallmark fills its orders properly, Flagler says. But if a supplier bungles enough orders, a retailer may fine it thousands of dollars because of the work involved to sort out the confusion and the sales lost because there are no products on the shelf.

Hallmark has long fed sales information from stores' point-of-sale (POS) scanners into its decision-support system (DSS) applications. Hallmark managers use those applications to analyze sales trends and forecast demand. Those systems can automatically order the shipment of replacement products to stores.

But Hallmark is going even further, adding data about its own distribution system to the DSS to ensure orders get where they're going on time. That data could include, for example, information about which past orders couldn't be filled because of heavy demand and how production should be increased in response.

Growing trend

The move to link decision-support and operational systems is emerging as a critical issue for information systems managers as companies try to streamline their inventory and distribution systems. To have users do their analysis on a DSS and then manually enter orders into a separate operational system creates the potential for error and takes more time. Electronic links between the systems are more efficient, but they are so complicated and expensive that only the largest, most aggressive companies have forged them.

For one thing, "There are few retailers out there who have a fully functional, robust DSS environment," much less the ability to link them to operational systems, says Keith Hammer, vice president and chief information officer at Crown Books Corp. in Landover, Md. Hammer also worked in IS for 11 years at electronic retailing giant Circuit City Stores, Inc.

That is because many DSS systems require data warehouses to combine data from different legacy applications. Before users can query the warehouse, the data in it must be reformatted, checked for accuracy and reorganized. The key business managers must agree on what information is most important, how it

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To market, to market

Products that link decision-support and operational applications are still rare. But the demand from retail customers – who want to squeeze excess costs and inventory out of their supply chains – has prompted some vendors to try to fill the void.

The most visible is INTREPID SYSTEMS, INC. in Alameda, Calif., which is integrating its Evolution retail operational system with its DecisionMaster decision-support software. This merged product will be available in the first quarter next year on IBM's AS/400 midrange platform and Windows NT. The company plans to port the system to Unix, with general availability sometime next year. The software will cost between $500,000 and $1.25 million. It will be aimed at retailers with annual sales of at least several hundred million dollars, company officials say. Intrepid can be reached at (510) 769-4000.

JDA SOFTWARE GROUP in Phoenix offers some integrated DSS and operational functions through its software products and consulting services. Its Distributed Store System runs on DOS-based POS systems. It can perform such functions as consumer preference tracking and is tightly integrated with JDA's AS/400-based Merchandise Management System. JDA can be reached at (602) 404-5500.

Among others in the field: LEGACY TECHNOLOGY, INC., a consulting and systems integration firm in Boston. Legacy can be reached at (617) 273-6400.

should be defined and in what form it should be provided. For example, three to four years ago, managers at The Home Depot, Inc. used "literally hundreds of reports" to monitor the performance of its stores, says Ron Griffin, vice president and CIO of the Atlanta-based home improvement retailer.

That made it harder to track financial performance and take corrective actioo because managers used different definitions of product lines or even selling periods. Convincing departments to agree on common definitions can be time-consuming and politically sensitive.

Home Depot pared its list of reports to 20. The reports go to everyone, down to the assistant store manager level. The information from those reports automatically generates suggested purchase orders for the stores. Store managers can modify the purchase orders, based on, for example, local weather conditions.

Farmers Furniture's Morton Mease *wants to bring "consistency and compliance" to the Georgia retailer's 108 stores by creating new DSS and operational systems*

Tricky move

It cost Home Depot "hundreds of thousands" of dollars to link those reports to its operational systems, Griffin says. The cost was well worth it given the competition in the home improvement retail business, he says.

But smaller vendors, or those who have tried and failed to create such links themselves, may have to rely on vendor solutions that are at least a year away.

Linking a DSS to an operational system can be tricky because "every operational system has different data requirements in order to create a transaction," says Richard White, president and CEO of Intrepid Systems, Inc. in Alameda, Calif. Intrepid promises to deliver a combined decision-support and operational system by early next year.

To link back to the legacy system, "we would probably provide standard extracts from the DSS and leave it up to the retailer to create a transaction from those extracts," White says.

Customers who replace their operational and DSS systems may have an advantage because they can build both systems from a common data model.

Crown Books, which hopes to fine-tune inventory and distribution functions to improve its third-place position io the discount bookstore market, is relying on Intrepid to implement its operational and DSS systems.

Hammer says he's confideot that Intrepid can deliver both critical systems, but at least one other retailer found his DSS implementation delayed when an outside company failed to deliver on its promises.

At Farmers Furniture Co., a $150 million furniture retailer based in Dublin, Ga., Morton Mease is also creating new decision-support and operational systems.

Mease, vice president of IS at the firm, aims to bring "consistency and compliance" to how the company's 108 stores do everything, from ordering merchandise to handling returns.

When they are completed late next year, the systems should streamline the chain's distribution system and pinpoint the best markets for its stores and the most profitable suppliers, according to Mease.

Mease is developing oew DSS and operational applications at the same time. The applications will replace a "very rudimeotary" DOS-based DSS system in each store with new Windows NT-based systems that will access a data warehouse scheduled for completion in early 1998.

Mease says he plans to use the World Wide Web to allow stores to upload order information to the host, which will place orders with furniture manufacturers.

Whether it is a giant such as Hallmark or a regional player such as Farmers Furniture, the question isn't whether to link DSS applications to operational systems but when and how. ■

Scheier is a *Computerworld* senior editor, management.

Giving credit to client/server

Corporate bean counters in the U.S. see big benefits in moving their firms to client/server technology, even if the reasons aren't purely financial, according to a survey of financial managers and officers at 2,000 firms.

The top reason according to 25% of respondents: improving accessibility of information. Increasing productivity was second at 18.98%, and enhancing analytical and reporting capabilities was third at 9.72%. Respondents were asked to rank the Top 4 reasons their firms switched. The percentages are weighted according to their rankings in each survey response.

The survey of the Controllers Council of the Institute of Management Accountants says 45% of the firms have implemented client/server, up 3% from a 1995 survey, and 27% plan to.

Also, 44% of the respondents said the shift to client/server was worth the cost, 37% said it was too early to tell, and 19% said the investment wasn't worth the outlay.

Council members are responsible for company investments, cash, budgets and forecasts.

Another recent survey says some of those who control the books may be working with some new client/server applications. The study, conducted by International Data Corp. in Framingham, Mass., says client/server applications will continue to expand, with accounting (37.5% of respondents said it was most likely to be deployed) and payroll departments (32.5%) leading the way. — *Rick Saia*

Year 2000 program starting up

The Atlanta-based Information Management Forum, a professional association for IS executives, is forming a working group on the year 2000 issue. Project planning, awareness programs, tool evaluations and vendor issues are some of the topics to be explored. Meetings will begin in the fall. To join, contact Jim Jones, managing director of the forum, at (770) 455-0070 or via the World Wide Web at www.infomgmtforum.com. Or send electronic mail to timf@mindspring.com.

Calling all anecdotes

A week usually doesn't go by in an IS organization without a funny story or two to tell your family and friends. Got some tales you'd like to share with us?
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Information: America's favorite investment

Money talks. And it talks more clearly about priorities than anything else. If you look at the statistics, information has become the most important way for companies to invest in their future.

Information technologies — computers, telephony, video, etc. — have become the preferred business tooling investment for U.S. corporations. And more corporate cash is spent on information management than on the annual costs of shareholder equity, according to my calculations.

The shift is so striking that one may rightfully designate the U.S. as having entered the Computer Age after 1982, in the same way that historians describe evolutionary progression in terms of the Stone, Iron or Automobile ages. After all, civilizations are defined by the tools they use. But this epoch-making shift has other ramifications for chief information officers and how information systems payoffs should be measured.

Well-funded expenditure

Business tooling is defined by economists as producer-durable equipment and is one of the most telling indicators of business priorities.

The number of executives who say they will increase spending on computer hardware and software has more than doubled in the past five years. Computer purchase plans are funded better than expenditures for all other business tooling.

This shift in preferences is best illustrated by showing the relative shares of capital spending in recent history (see chart below left). Skeptics may argue that a better measure of the priority given to information is how much of a company's revenue is invested in information technology. But that is a misleading indicator.

The costs of information technologies average only 2% of a firm's revenue, but they can have an enormous influence on a firm's operations. They have become the principal means of improving existing business processes. Just as in the human body, the relative weight of critical organs, such as the kidneys, isn't a good indicator of their importance.

Just a small piece

Computers make up only a small share of the total information costs of a firm because most of these expenses are for executives, managers, administrators, clerical and technical staffs or for technology purchases.

Computers also make up only a small share of the costs of a firm's assets — averaging less than 0.3%.

Therefore, a better way to assess the relative importance of information is to calculate the ratio of the costs of information management — which I define as sales, general and administrative plus research and development expense — to the costs of shareholder equity, which is the net value of all assets minus liabilities.

A firm's ratio of information management to shareholder equity is the most appropriate indicator of whether a company is information-intensive or capital-intensive. If a firm is overwhelmingly information-intensive, the role of the CIO rises in importance for assuring the success of the enterprise. I have calculated this ratio for 2,186 major U.S. corporations. The results are best illustrated below (see chart below right).

Some 1,926 corporations spent more on information management than on shareholder equity in 1994.

Only 260 firms, or 11.9% of U.S. companies, were found to depend primarily on shareholder capital as the most important input resource. About 70 years ago, capital would have dwarfed information costs.

Implications

The increased reliance on computers as a business tooling investment while corporate costs shift from capital to information has far-reaching implications:

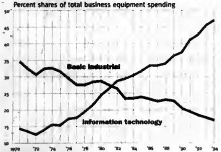
- The CIO should concentrate on enhancing the effectiveness and productivity of information management, not the efficiency of computers. Even large reductions in the expenditures for computers can't impact profits as much as a small gain in the effectiveness of information management.
- The conventional measures of payoff on invested capital — return-on-assets or return-on-investment — are increasingly irrelevant. These ratios, inherited from the industrial era of scarce capital, evaluate the productivity of something that is of diminishing importance. Instead, CIOs should assist corporate executives in applying better measures in evaluating the productivity of people who are engaged in the use of information resources. ■

Strassmann has been trying to explain spending on information technologies since 1955. He can be reached at www.strassmann.com.

U.S. businesses spend more on information technologies and information management than on other technologies or investments. It's time to rethink information management and IT spending.

Paul A. Strassmann
Web address:
www.strassmann.com

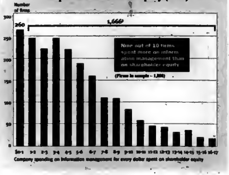
By 1994, IT spending in the U.S. nearly tripled that of 'basic' industrial equipment



Basic industrial spending includes production, transportation and process equipment as well as office fixtures. Business equipment spending not reflected in this chart includes aircraft, power plants, electrical equipment and other heavy equipment.

Source: Morgan Stanley U.S. Investment Research Newsletter, July 15, 1994. The newsletter is published by the Morgan Stanley Economics Department, New York

Information management spending surpasses shareholder equity (1994)



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   - 65. Communications Systems/Public Utilities/Transportation
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   - 12. Vice President, Asst. VP
   - 13. Treasurer, Controller, Financial Officer

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   - 70. Medical, Legal, Accounting Mgt.

   OTHER PROFESSIONAL MANAGEMENT
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   - 90. Other Titled Personnel

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   - (b) Netware
   - (c) OS/2
   - (d) Unix
   - (e) Mac OS
   - (f) Windows NT
   - (g) Windows
   - (h) NeXTstep

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3. Do you use, evaluate, specify, recommend, purchase. (Circle all that apply) Operating Systems (a) Solaris (b) Netware (c) OS/2 (d) Unix (e) Mac OS (f) Windows NT (g) Windows (h) NeXTstep App. Development Products ☐ Yes ☐ No Networking Products ☐ Yes ☐ No

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HOT HAPPENING — Computer Training and Support Conference and Expo. Nashville, **Sept. 8-11** — Contact: Softbank Institute, Medford, Mass. (617) 393-3635. Fax: (617) 393-3636.

Electronic Commerce World '96. Columbus, Ohio, **Sept. 9-12** — Contact: *EDI World Magazine*. Hollywood, Fla. (800) 336-4887. Fax: (954) 925-7533. E-mail address: ediworld@ix.netcom.com. Web address: www.ediworld.com.

ServiceTech '96: Conference on Innovation in Services Technology. Boston, **Sept. 9-12** — For managers who make decisions about implementing new systems in the following core areas of services technology: call management, problem resolution and telecommunications. Contact: AFSM International, Fort Myers, Fla. (941) 275-7887. Fax: (941) 275-0794. E-mail address: afsmi@afsmi.org.

Corporate Universities Enter the 21st Century. Schaumburg, Ill., **Sept. 9-10** — Contact: Quality Dynamics, Inc. New York. (800) 946-1210. Fax: (212) 626-6979. E-mail address: ALemcorpu@aol.com.

The Field & Sales Force Automation Conference. Boston, **Sept. 10-12** — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880. Fax: (508) 470-0526. E-mail address: ConfReg@dciexpo.com. Web address: www.DCIexpo.com/.

Year 2000 Conference & Expo. San Francisco, **Sept. 11-13** — Contact: Software Productivity Group, Westboro, Mass. (508) 366-3344, ext. 227. Fax: (508) 366-8030. E-mail address: lodonnel@spgnet.com. Web address: www.spgnet.com.

AFCOM '96 Fall Conference and IS Expo Trade Show. Miami Beach, Fla., **Sept. 29-Oct. 2** _ Contact: Association for Computer Operations Management, Orange, Calif. (714) 997-7966. Fax: (714) 997-9743. E-mail address: afcom@afcom.com. Web address: www.afcom.com.

HOT HAPPENING — SIM Interchange '96. San Francisco, **Sept. 29-Oct. 2** — Contact: Society for Information Management headquarters, Chicago. (312) 644-6610. Web address: www.simnet.org.

Firewalls and Web Security. San Jose, Calif., **Sept. 30-Oct. 1** — Contact: National Computer Security Association, Carlisle, Pa. (717) 258-1816, ext. 224. Fax: (717) 243-8642. E-mail address: kstevens@ncsa.com.

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The Financial Technology Expo. New York, **Sept. 17-18** — Contact: Miller Freeman, Inc., New York. (212) 615-2765. Fax: (212) 615-2901.

FinExpo '96. The National Financial Information Technology Exposition and Conference. Chicago, **Sept. 24-26** — Contact: Blenheim NDN, Mountain View, Calif. (800) 232-3976. Fax: (415) 966-8934.

USER GROUPS

PictureTel User Group Conference. Long Beach, Calif., **Sept. 8-11** — Contact: Catherine Takacs, PictureTel User Group, Morristown, N.J. (800) 784-4636.

NADGUG 96 (Data General user group) — Open Horizons. Phoenix, **Sept. 8-11** — Contact: NADGUG, Sudbury, Mass. (800) 253-3902, ext. 1222. Web address: www.dg.com/customers/nadgug/index.html.

Atria's ClearCase International User Group Conference. Burlington, Mass., **Sept. 9-11.** — Fee: $395. Contact: Atria Software, Inc., Lexington, Mass. (617) 676-2400. E-mail address: cciug_reg@atria.com.

Natural MicroSystems Corporation Developers Conference. Needham, Mass., **Sept. 10-12.** — Contact: Kathy Scott-White, Natural MicroSystems Corp., Burlington, Mass. (800) 533-6120, ext. 339.

Comshare North American Users. Lake Buena Vista, Fla., **Sept. 15-18** — Contact: Comshare, Ann Arbor, Mich. (800) 489-7551.

Windows on Healthcare Conference and Exhibition. Las Vegas, **Sept. 17-19** — Contact: Microsoft Healthcare Users Group, Ann Arbor, Mich. (313) 973-1995. Web address: www.microsoft.com/industry/health/ms_hug.html.

TECHNOLOGIES

Desktop Videoconferencing Conference and Exhibition. Boston, **Sept. 3-6**. Subject: Using Technology To Enhance Workgroup Collaboration. Contact: BCR Enterprises, Hinsdale, Ill. (800) 227-1234. Fax: (708) 323-5324.

SAP R/3 Implementation. Dallas, **Sept. 9-10** — Contact: IBC USA Conferences, Inc., Southboro, Mass. (508) 481-6400. Fax: (508) 481-7911. E-mail address: reg@ibcusa.com.

Technology Forecasting Workshop. Austin, Texas, **Sept. 9-11** — Contact: Technology Futures, Inc., Austin, Texas. (800) TEK-FUTR or (512) 258-8898. Fax: (512) 258-0087. Web address: www.tfi.com. E:mail address: info@tfi.com.

Wireless Local Loop Systems. Washington, **Sept. 10-11.** — Contact: TeleStrategies, Suite 110, McLean, Va. (703) 734-7050. Fax: (703) 893-3197. Web address: www.telestrategies.com.

Engineering and Manufacturing Enterprise Solutions. Boston, **Sept. 10-12** — Contact: The Institute of Electrical and Electronics Engineers, Inc., Andover, Mass. (800) 767-2336. Fax: (508) 470-0525. E-mail address: ConfReg@dciexpo.com. Web address: www.DCIexpo.com.

Network World Unplugged Exposition. Boston, **Sept. 11-12** — Contact: Digital Consulting, Inc., Andover, Mass. (800) 324-3976. Fax: (508) 470-0526. E-mail address: ExpoReg@dciexpo.com. Web address: www.DCIexpo.com.

HRMS/EXPO '96: The National Human Resources Information Technology Exposition and Conference. Dallas, **Sept. 11-13** —. This is a major show for those whose information systems staffs support the human resources function. Contact: Blenheim NDN, Mountain View, Calif. (800) 232-3976.

HOT HAPPENING — Networld/Interop '96. Atlanta, **Sept. 16-20** — Contact: Softbank Expo, San Francisco. (800) 488-2883. Fax: (415) 525-0199. Web address: www.interop.com.

IMA Expo (Interactive Multimedia Association). New York, **Sept. 17-19** — This new trade show is being cosponsored by International Data Corp. and the industry's major association. Contact: Infotainment World, San Mateo, Calif. (800) IMA-3519.

Data Warehousing Conference. Phoenix, **Sept. 17-19** — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880. Fax: (508) 470-0526. E-mail: ConfReg@dciexpo.com. Web address: www.DCIexpo.com/.

Solutions Summit: Messaging and Intranet Integration. Santa Clara, Calif., **Sept. 24-27** — Contact: EMA Solutions Summit, Baltimore. (703) 524-5550. Fax: (703) 524-5558. E-mail address: meet@ema.org. Web address: www.ema.org.

INTERNET

Internet & Electronic Commerce Conference & Exposition. San Francisco, **Sept. 4-6** — Contact: Expocon, Fairfield, Conn., (203) 256-4700, ext. 100. Fax: (203) 256-4730. E-mail address: iec@expocon.com. Web address: www.expocon.com.

HOT HAPPENING — Internet Commerce Expo. Anaheim, Calif., **Sept. 9-12** — Contact: IDG, Framingham, Mass. (800) 667-4423. Fax: (508) 370-4325. Web address: www.idg.com/ice/.

National Conference on Commerce te Cyberspace. Crystal City, Va., **Sept. 11-12** — Contact: CERCA (Council for Electronic Communication Advancement), Chicago. (312) 644-6610, ext. 3435. Fax: (312) 527-6658.

COMPUTERWORLD

Look to our Web site (www.computerworld.com) for information on upcoming workshops and conferences.

Calendar announcements should be submitted at least eight weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

Rick Saia, Associate Editor/Managing, Computerworld, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931.

INTELLIGENT STORAGE HUB

FOR EVERYONE WHO'S BEEN WAITING PATIENTLY FOR FASTER NETWORK STORAGE.

HOW DOES 50% FASTER SOUND? Probably like a dream for those seeking a smarter way to manage data. In that case, the Symbios Logic MetaStor SH4000 intelligent storage hub is a dream come true. It's a new storage system that attaches directly to your network and significantly increases throughput. Better still, it's from Symbios Logic, a leader in storage technology.

METASTOR™

The solution to managing data across large networks isn't as simple as adding disks or a new server, because general-purpose file servers aren't optimized for centralized storage. The MetaStor SH4000 intelligent storage hub is. It's all about I/Os and an astounding NFS Ops of 1,350. While storing up to 252 GB, it supports more users and reduces response time. It eliminates bottlenecks, automatically backs up and restores, conserves network resources and controls costs.

And the dream gets even better. Because the intelligent storage hub includes high-bandwidth RAID, an industry-leading 99.99% data availability, and an integrated five-DLT-drive tape array for 400% faster backup. And to meet future needs, it's designed for easy expansion.

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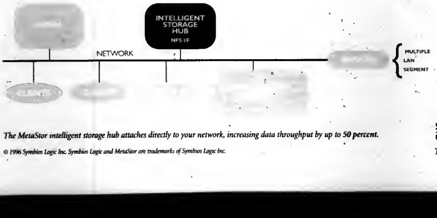

The MetaStor intelligent storage hub attaches directly to your network, increasing data throughput by up to 50 percent.

SYMBIOS LOGIC

The Storage Connection

In Depth

Monticello Memoirs

A historic summit brings reminiscence, to be sure, but these pioneers' eyes are squarely on the future — of computing, business and society

By Paul Gillin

The computing industry brainpower that gathered at Thomas Jefferson's spectacular Monticello home in April was astonishing. A joint effort of *Computerworld* and the Smithsonian Institution, the Monticello Memoirs program is an ongoing project to document the history of the industry as told by those who shaped it.

I had the opportunity to spend two days with this remarkable group of inventors. I had expected the participants to be reflective and circum-

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Monticello Memoirs

CONTINUED FROM PAGE 67

spect about the technology changes they had implemented. I was wrong. Energetic and impatient, the panelists spent more time planning for the future than reflecting on the past.

For Jay Forrester, whose 1950s Whirlwind computer was a seminal invention in the industry, the crisis in education threatens to swamp computerization benefits. For Seymour Cray, father of the supercomputer, the challenge is to build computers that grow and learn like biological organisms.

Ethernet inventor Bob Metcalfe blasted telecommunications deregulation for sparking corporate mergers instead of technology innovation. Microprocessing pioneer Gordon Moore said that his famous Moore's Law — in which price/performance doubles every 18 months — has a good 10 years of life left and that we haven't a clue about what changes are in store. Gordon Bell, the brilliant engineer, railed against industry standards wars.

Far from satisfaction, the participants in eight hours of meetings expressed restless concern that their accomplishments become a long-term positive force for change in the world. Not content to rest on their laurels or count their stock options, they fretted and debated, joked and pontificated, but ultimately they came together in a deep mutual respect for one another and for the changes they had wrought. ■

Gillin is Computerworld's *editor.*

Jay Forrester

I started as a cowboy on a Western cattle ranch where my father was the original homesteader. So we're that close to the American frontier. My career is really an attempt to avoid driving cattle in a Nebraska blizzard.

I went to the University of Nebraska, studied electrical engineering, went to MIT for one year of graduate study and haven't gotten away yet. Was fortunate enough to participate in the early days of developing feedback control systems — server mechanisms for the military in the early 1940s.

Then, in the last part of the '40s, I led the group that built the first digital computer at MIT. This led to the creation of the MIT Lincoln Laboratory for Air Defense, where I headed the program that led to the air defense system that was installed across Canada and the United States in the late '50s.

In 1956, I decided the pioneering days in computers were over, and it was time to do something else. Went to the MIT Management School, where I have since been developing the field of system dynamics. At the present time, my interest is the use of that field as a new kind of foundation for kindergarten through 12th-grade education.

As a frontier, I see science and technology drawing to a close. Now it is very much a production line. You want a new scientific idea, you get some money, you hire some people, you give them a building, you expect to get what you want with a fairly high probability — and that's just like making refrigerators.

The new frontier, as I see it, is understanding our social and economic and political systems, in which the understanding has not advanced substantially in the last 2,000 years. I think the work I'm doing in K-12 is at least one step in creating a population that is on the road to understanding that frontier, which will extend into at least the next 50 years.

If we look at universities, we see a lack of courage in working on the big and the important problems. It is no harder to work on a really big, important problem than it is to work on a little, unimportant one. And therefore, you should set your sights at the top of the list: What is it that matters to the future? It means looking at the problems that have persisted for a thousand years unsolved and what you can do dramatically in the reasonably short run to change the direction of the world.

My father was a test technician, and my mother approved, and so I went to MIT and fell into computer networking in 1969. Worked on the Arpanet, then at Xerox's Palo Alto Research Center, where it was my good fortune to be given the job of networking early personal computers, and there invented Ethernet on May 27, 1973.

After eight years, I went off and started a company because it was the thing to do in Silicon Valley. I started a company called 3Com, where I worked for 11 years, and retired in 1990. In 1990, I became a journalist, a computer trade journalist. I now write columns for a newspaper called Infoworld.

Robert Metcalfe

Most of the people I ask, when offered the choice between twice the bits per second on their desk or twice the instructions per second on their desk, would prefer twice the bits. And that's a consequence, I think, not of technological lagging but of poor design of an industry — namely, the monopoly approach to telecommunications.

In '68 and the early '70s, we eliminated the phone companies' customer premises equipment monopoly. We later overthrew the monopoly in long distance. This year, we were supposed to overcome the monopoly in local telecommunications. And we passed the Telecom Act of 1996, which, as far as I can tell, is a missed opportunity. What we're seeing is a further agglomeration of these companies, which are too big and too powerful and too monopolistic.

We have the Luddites and the socialists on the run, and we ought to keep them on the run. I think competition and choice are the solutions to most problems. We should steer away from solutions that lead us to single solutions and no choice.

I began my career as an electrician. Went to MIT, became a Fulbright student, then in 1960 worked on the invention of the minicomputer, the concept of putting computers with other things and building the first commercial time-sharing computer.

In 1960, I went to Carnegie Mellon (CMU) as a computer science professor. Stayed there until '72. Wrote a book with Alan Newell on computer structures that was sort of a textbook for several years.

In 1972, I took leave from CMU and went back to [Digital Equipment Corp.], ran DEC Engineering for 12 years. Did the VAX and the VAX VMS, was responsible for all the R&D at DEC. When I left DEC, I got involved in a number of start-ups.

Then I went to the National Science Foundation to start up the computer science directorate. After my short career as a bureaucrat, I've been involved with start-ups ever since. Thought I would never be working in another company, and then last year, Microsoft persuaded me to work half-time.

Gordon Bell

E-mail today is flattening organizations and making communication different. And that all leads to restructuring, although we don't want to say that very loudly as computer people. I think the same thing is going to happen in the Internet. Already you hear examples of pipeline development: Design it in India, and test it in Ireland and market it in California. . . .

These bytes get awfully boring. Another language, another application — they all look alike. I would like a moratorium on browsers for a year. I mean, I love the Internet. It's a joy to use — but hey, a year without a new browser would be a really welcome relief.

In the future, I see massive opportunities as an engineer to build things — to build virtual spaces, to really do telework. That's what I happen to be interested in. But I can look at the other side, too, and see tremendous dislocation.

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Monticello Memoirs

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I grew up as a chemist. Started making nitroglycerin in my home laboratory. Finally got a Ph.D. from Cal Tech. I got into the semiconductor business about the time the silicon arrived in Silicon Valley.

I was Bill Shockley's 18th employee with a little operation he was setting up out there. I was one of the eight founders of Fairchild Semiconductor. Then was a founder of Intel in 1968. I have been with Intel ever since. I gave up being CEO in 1987, but I still kibitz on what's going on there and find out what's going on in the world. It's too exciting to pass up.

Gordon Moore

We've seen a tremendous change in the nature of our employment. We used to have a lot of jobs for people who depended on their manual dexterity; we tested them under a microscope to see if they could manipulate things. Now we test them for reading knowledge of English and ability to learn computer skills. We essentially have none of the jobs that were most prevalent only 20 years ago.

Increasingly, society is being split into two classes based on education. To me, that's a major concern. We talk about getting rid of barriers across the world, but we're really getting rid of barriers among 30% of the population. And 70% of the population are nonparticipants in the information revolution.

I don't think it's fair to burden the corporation with the responsibility for the jobs they didn't create because they bougbt advanced machinery. Remaining competitive in this world is, frankly, a full-time job. The corporation is uniquely set up to address that. The corporation is set up with a very narrow purpose of pursuing its best interests.

I was fortunate to graduate from the University of Minnesota at just the right time to be at the beginning of computers. Went to work for Engineering Research Associates, which was doing Navy contracts for cryptographic work. Engineering Research Associates was acquired by Univac, and I left that in 1957 to start Control Data Corp.

I stayed there until it got big and ugly, and then I started Cray Research until it got big and ugly, then I started Cray Computer. So my claim to fame is perseverance; I've managed to accumulate more miles than anyone else in the supercomputer business.

Seymour Cray

We lack challenges today as societies, as countries. We tend to fight a little less now — at least the large countries do — and so we don't have the problem of defending, and I think one of our great problems is we need a real challenge.

Now you can think of lots of challenges in everyday life, but those aren't the kinds of challenges that get people together. We need a common enemy. It doesn't have to be another country.

I think the Internet is the vehicle to bring people together, and I hope that will happen in the next few years. One of my hopes is that communication through the Internet worldwide will tend to break down nationalism. I think following communication will come transportation. After we talk to people all over the world and share our thoughts, we'll start to get together physically. We'll end up with a better world in the sense that we will share more things than we do now.

Getting their due

AS/400 talent is suddenly in high demand — and short supply. The impact is finally forcing salaries to rise.

By Steve Alexander

James Borris

Peter Kozlek would like to hire an AS/400 programmer experienced in distribution, financial and manufacturing software. But after five months of trying, he's getting discouraged.

At the same time, several AS/400 programmers Kozlek knows of have taken advantage of the high demand for their services. They've become independent contractors, says Kozlek, director of information systems at Alfa Laval Separation, Inc. The Warminster, Pa., company manufactures fluid separation equipment for municipal waste treatment plants and U.S. Navy ships.

Kozlek's frustration is only partly alleviated by the knowledge that he isn't the only one who's having trouble recruiting AS/400 professionals. A hiring boom has made programmer/analysts and managers in the AS/400 field hard to come by. As a result, salaries are rising.

"I think I'm having the same problem everyone else is having," Kozlek says. "The really qualified candidates are moving to new jobs very quickly, and you have to know by word-of-mouth when somebody is leaving a job."

The hot AS/400 market is mostly due to an improved national economy, says Nate Viall, an AS/400 market researcher and a recruiter. He is president of Nate Viall & Associates in Des Moines, Iowa, which publishes salary studies of the AS/400 market.

"The economy has been very solid, and both profits and revenues for companies are up. At the same time, the backlog is up in AS/400 application work, and companies are adding staff," Viall says. As a result, raise percentages "have more than doubled from [what they were] 12 to 24 months ago."

Another reason for the booming AS/400 employment market may be an increase in the number of AS/400 users. "We cataloged as many brand-new accounts for the AS/400 in the first half of 1995 as we did for the entire year of 1994," Viall says.

Kozlek is relying on two contractors while he seeks a full-time employee. But he says he can't afford to keep doing it. "We're paying $90,000 a year for a contractor, whereas we should be able to find a good programmer analyst for $45,000 to $50,000," he says.

Randy Allen, chief administrative officer and chief information officer at Phillips-Van Heusen Corp. in New York, says it's hard to hire AS/400 personnel because "a lot of people migrated to client/server and sexier platforms, and that diminished the pool of AS/400 people." Her company is seeking five AS/400 developers who can do programming and analytical work.

Edward Wojciechowski has been hiring AS/400 programmers for the past 18 months and hopes to hire 16 more this year. "We have worked very hard at finding folks," says Wojciechowski, vice president of information technology at Maytag Corp., an appliance maker in Newton, Iowa. "We have seen the jump in salaries, but I don't think they are out of line. I think salaries may have jumped more because we're in catch-up mode."

Staples, Inc., an office-supply superstore chain in Framingham, Mass., claims to have the largest AS/400 shop in the Northeast. The firm's revenue is expected to rise to $4 billion this year from $3 billion last year, and business growth requires more AS/400 personnel.

In the past 12 months, Staples has hired approximately 35 AS/400 programmers and IS professionals with related skills. By next January, the company plans to hire twice that many or more, CIO Frank Andrews says. The additional staff will be needed to handle expanded use of AS/400s in merchandising and, possibly, distribution, Andrews says.

John Marascia, an AS/400 recruiter at The Kleven Group, Inc. in Lexington, Mass., says the AS/400 hiring boom could last several years. But he doubts that salaries can continue their sharp annual increases. "I think there has to be a tapering off. I don't see how they can continue to go up," he says. ■

Alexander is a freelance writer in Edina, Minn.

Luring new talent

AS/400 salaries are rising most dramatically at the low end

Job title	1995 salary	1996 salary	increase
Vice president or CIO	$98,900	$101,700	2.8
MIS director	$77,700	$79,800	2.7
Data processing manager	$53,000	$54,700	3.2
Programmer/analyst (5-6 years' experience)	$37,000	$40,200	8.6
Programmer/analyst (1-2 years' experience)	$27,800	$31,500	13.3
Entry-level programmer/analyst (4-year degree)	$27,000	$30,000	11.1

Source: Nate Viall & Associates, Des Moines, Iowa

Regional Scope: Pacific Northwest

The *New* Silicon Valley?

High-tech firms are flocking to the Pacific Northwest, lured by the low cost of living and high quality of life

BY LYNN HABER

For years, Oregon and Washington have seen their economies bolstered by industries that rely on the area's natural resources, such as farming and logging. But times are changing in the Pacific Northwest, as an influx of high-technology and information service firms has prompted many to call this area the next Silicon Valley.

Firms in the Pacific Northwest tend to be in various stages of client/server development. This is fueling an ongoing demand for client/server, Windows, C and C++ skills. There are opportunities for mainframe talent here as well, but to a lesser degree. What that means to many information systems' job seekers is a wealth of opportunity in a region considered one of the most livable in the country.

Portland: A bed of roses

Known as "The City of Roses," Portland, Ore., is blooming with IS job opportunities. Industries putting up help-wanted signs include electronics, financial services, high technology, retail and transportation

Apparel companies such as Nike, Inc in Beaverton, Jantzen, Inc. in Portland and Columbia Sportswear Co. represent a few of the Oregon manufacturers where IS jobs continue to develop. Jantzen is looking for IS professionals who have strong business backgrounds and groupware skills, particularly in Notes, says Frank Schneider, the company's IS director.

In the health care industry, Kaiser Permanente Northwest Region is rapidly expanding its IS department. The company has added 50 positions over the past five years, largely for people with PC skills, open architecture experience and familiarity with Microsoft Corp.'s Visual Basic. "We like to find people who are moving into their second or third IS job and can demonstrate competency," says Gary Huscher, application group manager at Kaiser. "Less important are mainframe skills."

In the insurance industry, Standard Insurance Co. in Portland reports a dozen openings in its IS department of 200. "We're a growing company with a number of IS jobs to fill," says Mary Gibbons, assistant vice president at Standard. In particular, the firm is looking for LAN administrators, project supervisors, process analysts and data analysts.

Portland's Mt. Hood, seen from the International Rose Test Garden

Seattle: Raining opportunity

If you can hack the rainy climate, Seattle is another mecca for IS job seekers. Demand here is high and largely unfilled.

In particular, the Seattle area continues to attract high tech, mostly software development firms lured to the land of Microsoft. With 3,000 IS openings in the area, job seekers with experience are well-positioned in the market.

"Individuals with a few years of hands-on technical experience with relational databases, client/server, C and C++ are very much in demand here," says Dennis Fuhrman, managing director at Source Services Corp., an employment recruiter in Seattle.

Representing the state's more traditional industrial base of forest products is Weyerhaeuser Co. in Tacuma. Hiring at the company has slowed, but there is a need for data modelers, Internet developers and electronic data interchange specialists. "We continue to look for programmers, analysts, client/server developers and network engineers," says Kathy Richardson, staffing manager at Weyerhaeuser.

Blue Cross/Blue Shield of Washington and Alaska, based in Seattle, is looking to add about 15 employees to its 100-member IS department. Staffing contractor Robert Crista says he is interested in IS professionals who have three to five years of platform experience, sometimes more. The challenge: "Basically, there are a lot of companies looking for the same talent we are, paying competitive salaries," he says ■

Haber is a freelance writer in Norwell, Mass

What the jobs pay

Portland skyline

	Seattle	Portland
Mainframe programmer/analyst	$41,300	$42,000
Midrange programmer/analyst	$37,900	$39,300
Client/server programmer/analyst	$49.100	$55,000
Graphical user interface programmer/analyst	$49,200	$47,300
Software engineer	$51,000	$53,000
Database administrator	$57,500	$60,000
LAN administrator	$41,800	$43,400
PC software specialist	$35,000	$36,300
Systems administrator/manager	$46,500	$52,400
Project manager	$61,700	$58,200

Source: EDP, Dallas

Where to look

The area's largest employers include:

Seattle skyline

Seattle	Number of employees
The Boeing Co.	73,000
Sisters of Providence	11,351
Microsoft Corp.	10,591
Group Health Cooperative	9,000
Portland	
Intel Corp.	8,000
Fred Meyer, Inc.	7,800
Kaiser Permanente Northwest Region	6,000
Providence Health System	5,785
U.S. BankCorp	4,895

Regional Scope: Pacific Northwest

The *New* Silicon Valley?

High-tech firms are flocking to the Pacific Northwest, lured by the low cost of living and high quality of life

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Client/server programmer/analyst	$49,100	$65,000
Software engineer	$51,000	$58,000
LAN administrator	$41,800	$43,400
Systems administrator/manager	$46,500	$62,400

Where to look

The area's largest employers include:

Seattle skyline

Seattle	Number of employees
The Boeing Co.	73,000
[illegible]	[illegible]
Microsoft Corp.	10,591
[illegible]	[illegible]
Portland	
Intel Corp.	8,000
[illegible]	[illegible]
Kaiser Permanente Northwest Region	6,000
[illegible]	[illegible]
U.S. BankCorp	4,895

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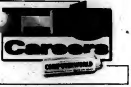

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Software Systems

Programmer Analyst (2 openings) - Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user request for new or modified programs; determine feasibility, cost & time required, compatibility with current system & computer capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer. Analytical problem solving, programming, coding, testing, debugging, implementation, providing maintenance & technical support, process flow, data flow design & meeting with users to gather requirements using PC-XT/AT, VS-COBOL II, CICS, VSAM, FOXPRO, MS-DOS, IBM 3090/ES9000, MVS/ESA, ENDEVOR, TSO/ISPF, DB2, QMF, BMC, SQL, ISAM, C, UNIX & Novell Netware 3.11. Reqs. Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in education & exp. & 3 yrs. exp. in the job offered or 2 yrs. exp. in related occup. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the required ed. & exp. Must have some related experience which included using each of the following: PC-XT/AT, COBOL II, CICS, VSAM, FOXPRO & MS-DOS. $42,940/yr. 40 hrs/wk, 8:30a-5p M-F. Send resume to 7310 Woodward Avenue, Room 415, Detroit, Michigan, 48202. Include Ref #88398. Employer Paid Ad.

Software Consultant: Analyze & evaluate clients' existing management information systems. Define problem areas & determine appropriate solutions through use of mathematical models, computer simulations & systems analysis. Assess interface between hardware & software platforms & recommend plans for systems integration which will allow communication between mainframes, AS/400 platforms & laptops. Analyze systems' overall operational & performance requirements to determine optimal designs. Develop management systems on IBM & AS/400 platforms which may be used for various clients in the banking, finance, warehouse & mfg industries. Systems will be implemented using OS/400, RPG/400, COBOL/400, & MS-DOS operating systems as well as Command Language, QUERY, SQL, SDA & DBA software languages. Some projects performed on client sites at various geographical locations. Must have B.S. in Comp. Sci. but any technical degree (B.S., B.Engr or B.Tech.) may be substituted for Comp. Sci. major. Must have completed 1 course each in the areas of advanced mathematics & computer simulation. Must have 2 yrs experience in the job offered or as Systems Analyst. Experience must include a) use of the following software: OS/400, RPG/400, COBOL/400, Command Language, QUERY, SQL, SDA, DBA & MS-DOS, & b) AS/400 development projects with modules for finance, banking, mfg. & inventory mgmt. 40 hrs/wk, 9am - 6pm, $45,000.00/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, IL 60605, Attn. BRENDA KELLY, Ref# V-IL-14871-K. AN EMPLOYER PAID AD. NO CALLS. SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Programmer Analyst (2 openings) - Plan, develop, test & document computer programs applying knowledge of programming techniques & computer systems, evaluate user request for new or modified programs, determine feasibility, cost & time required, compatibility with current system & computer capabilities; consult with user to identify current operating procedures & clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer. Responsibilities include process flow & data flow design, technical support, overall design of the system & meeting with users to gather requirements, using IBM 3090, MVS/ESA, COBOL II, JCL, TSO, CICS, DB2, MS-SQL Server RDBMS, MS Visual Basic 2.0/3.0, C, MS Windows 3.11, UNIX, DOS, PC/AT, SCO-UNIX & Ingres. Reqs. Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in ed. & exp. & 6 months in the job offered or 6 months in a related occup. as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant or Software Development Executive. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the required ed. & exp. Must have some related exp. which included using PC/AT, SCO-UNIX & Ingres. $41,000/yr. 40 hrs/wk. 8:30a-5p M-F. Send resume to Job Service 742 F East Chatham Street, Cary NC 27511. Must include SS# & Job Order #NC5760025 & DOT code 030.162-014

Sr. Programmer Analyst, Corp. & Institutional Banking: Develop and support various banking applications which are part of a database repository for all trading activities of the Trading Products Group using "C" language and SYBASE products-Open Server libraries, T-SQL, Report Workbench, and APT, under UNIX Operating System using Client/Server architecture; participate in the technical design, programming, and testing of application modules; work closely with systems management and operations team and user areas on development, testing, and support; and manage a staff of programmers and administrative staff, including the hiring, training and promotion of personnel.

6 years college. M.S. degree or foreign equivalent in Computer Science or Computer Applications required. 2 years experience in the position or 4 years as Consultant and/or Systems Engineer, or any combination thereof required. Experience in related occupation(s) must include experience performing technical design and programming of banking applications using "C" language, SYBASE products-Open Server libraries, T-SQL, Report Workbench, APT, UNIX Operating System, client/server architecture.

40 hrs./wk., 8:15 a.m. - 5:00 p.m., $52,500/year. Must have proof of legal authority to work permanently in the U.S.

Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605. Attention Joan Sykstus, Reference Number V-IL-15308-S. NO CALLS. AN EMPLOYER PAID AD

Consultant, Customized Computer Hardware & Software Design wanted to design, develop, test and implement customized computer hardware and software systems for educational applications using Microsoft FOXPRO and FONT CREATOR software and M.S. DOS & Windows 95 operating systems, and applications, such as: Word 6.0 on an IBM compatible personal computer systems (486, Pentium), including: developing networking for computerized non-Roman English/foreign language grammar and spell checking system, and developing fonts for computer languages and other computerized teaching/study aids, such as computerized grading/self-testing equipment. Develop technical computer training manuals in order to assist classroom teachers at all grade levels and students in use of the system, and install, integrate and troubleshoot system as necessary with existing computer hardware., 40 hr. per wk., 8:00 AM - 5:00 PM, $52,725/yr. As an educational requirement, Bachelor of Arts in Computer Information Systems as granted by a regionally accredited U.S. university, or the equivalent as determined by a professional work equivalency credentials evaluation. In lieu of a Bachelor of Arts in Computer Information Systems, 2 years experience as a Senior Consultant Required. As a minimum experience requirement, 7 yr. in the job offered as described above or 7 yr. in the related occupation as a Senior Consultant, or Electronics Engineer. "Employer Paid Ad." Send resumes to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Ref # 81896

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904-636-6185
Fax: 904-737-0666
E-mail: Paul@imanet.com

Software Engineer assigned as Systems Analyst to design & develop software for complex computer systems running on AS/400, including analysis of operational & performance requirements of overall system including user requirements, procedures, & business function, review of computer system capabilities, hardware & software interface, workflow & scheduling limitations; determination of feasibility of design; maintenance of system performance standards, recovery & continuity, & provide assistance in installation & implementation, utilizing RPG & CL, sorting using FMTDTA command, data queues, data areas subsystems, subfiles, & system performance monitoring. Requires B.S. or equivalent degree in Electrical, Civil, Mechanical or other Math based engineering discipline; 3 years experience in software design, development & maintenance in RPG & CL coding on AS/400 system, thorough proficiency in sorting using FMTDTA command, data queues; data areas & subsystems, subfiles, & system performance monitoring. Must pass employer's standard proficiency test in computer language (RPG/CL). Candidates must be presently eligible for permanent employment in U.S.A. Salary $48,000-$65,000/yr depending upon qualifications; 40 hours/wk. (8:00 a.m. - 5:00 p.m.) plus Employee Benefit Plan. Overtime as needed without compensation. Multiple openings available. Send resume & details of experience to Mrs. J. Gaston, Job No. 395723, Division of Employment Security, P.O. Box 339, Florissant, MO 63032. An Employer Paid Ad.

Programmer/Analyst (11 Openings) Milwaukee, WI information technology consulting firm seeks individuals to design, develop, document, test, & debug complex software applications for both PC & UNIX platforms. DUTIES: Interview users to produce requirement analysis documents; relational database modeling & design; database building & maintenance, GUI design & development. Interaction with users to ensure compliance with system & business requirements, utilize SQL for enforcement of data integrity & business rules; design & develop application reports; perform unit & system testing. REQUIRES: Bachelor's degree in computer science, computer engineering, OR MIS. ALSO REQUIRES: 2 yrs. performing job offered, or 2 yrs. as Programmer/Analyst, which must include 2 yrs. of database application design & development and 1 yr. of GUI design & development, a development language, i.e. C, C++, Visual Basic, and at least one relational database management system, i.e. dBase, SYBASE, Oracle, etc. (All special experience may be concurrent with basic requirement of 2 yrs. as Programmer/Analyst.) SALARY $38,000 to 57,000. 40 to hrs/week, Mon-Fri 8 am-5 pm. SEND 2 COPIES OF RESUME TO MIKE BROOKS, JETS-ALC, PO BOX 7972, Madison, WI 53707-7972. REFER TO CASE NO. 960251

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- PowerBuilder 4.x with Oracle 7.x or Sybase
- Oracle Financials
- IMS DB/DC with COBOL II

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1100 Poydras St., Suite 1250, New Orleans, LA
70163; Toll Free (800) 347-1670 Fax (504) 585-3760
E-mail: nola@mailhost.accesscom.net

Programmer Analyst to design, develop, test & document computer programs, applying knowledge of programming techniques & computer systems, analyze & develop specifications for systems design to determine feasibility & cost & time required, analyze requirements to map those requirements to EDP flow charts & determine optimum way of designing system & programs to achieve required results with best performance using MS-COBOL, SYBASE, FOXPRO, LAN, UNIX & C, & install & test programs; Reqs. Bach. or Comp. Sci., Computer, Electrical or Electronic Engg., Systems Analysis, Comp. Info. Systems, Math or equiv. in ed. & exp., 1 yr exp in job offered or 1 yr related exp such as Programmer, Programmer Trainee, Analyst, Software Engineer or Consultant. Will accept 3 yrs college ed plus 3 yrs exp in job offered or related occup in lieu of req'd ed. & exp. Related exp must include, in whole or part, analysis, design, development & implementation of various development using FOXPRO, COBOL under UNIX & LAN environments. $42,000/yr. 40 hrs/wk 9a-6p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref #88086 "Employer Paid Ad"

SOFTWARE ENGINEER: Design, develop and implement network systems software for real time OS (OS-9/OS-9000). Includes protocols (TCP/IP, UDP), drivers (am79c970, ATM, FDDI), and applications (NFS, Telnet, FTP, rsh, rlogin). Also includes testing new software and maintenance of existing software. Master's degree in computer science, min. 3 yrs. experience writing network system level software using C/C++, 680x0, 80x86, PowerPC assembly. Document software process according to current ISO9000 standards. Strong knowledge and implementation of TCP/IP protocol stack and ethernet device drivers. Experience with networking and socket-level programming. Knowledge of SNMP Version 2, Stream, OSI structure, NFS/RPC, routing protocols, X.25, T1/T3 a plus. 40 hrs./wk, $37,000/yr. Must have proof of legal authority to work in the United States. Send your resume to D.E.S. Workforce Center, 215 Keo Way, Des Moines, Iowa 50309-1727. Refer to Job Order IA1100534. This advertisement is paid for by the employer.

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Management Consultant: Consults with executives and managerial staffs of corporate clients to determine informational and data needs of current and future relational database software systems. Plans, budgets, evaluates and directs entire project for the development of such software including direction of senior consultants, senior programmer analysts, and software engineers. Directs the activities relating to conversion of multi tier system including but not limited to conversion from personal computer and midrange to personal computer for implementation in a client/server environment of Sybase and Oracle relational databases. Establishes system architecture, testing procedures, and feasibility studies to determine appropriate database system processes by using Powerbuilder as a front-end development tool and directs the activities of technical staff for purposes of implementing such relational databases in a Local Area Network environment including such networks as Windows NT. Directs establishment of such satellite and remote access sites by establishing dial-up and other telecommunication systems to allow access to database systems by portable and stand-alone computer systems indirectly linked to network systems. Develops appropriate business models based upon corporate structure. Requires Master's degree in Computer Engineering or any engineering field. Also requires three years and six months experience in the job to be performed. In lieu of three and a half years experience, will accept three and a half years experience in the related occupation of Senior Consultant and/or Senior Programmer Analyst if at least one and a half years experience as a Senior Consultant in which the individual directed the activities of conversion from a mainframe and midrange computer to a PC based relational database system including the design of the entire system, architecture hardware and software integration, and development of various Powerbuilder SQL server in a Windows NT environment including prototype software development, establishment of foundation library for system access including estimation and implementation of a remote dial-up module for access to such relational databases including development of front-end security systems based upon storage and retrieval of passwords and internal security set-up and authorization verification and two years experience as a Programmer Analyst in which the individual designed and developed framework application architecture for an Oracle or Sybase relational database system using Powerbuilder as a front-end development tool and Visual Basic or other systems for implementation of a graphic user interface in a client/server environment including multi-platform and conversion from one computer system to another by using application servers for data transfer subsystem testing. All of such experience must include project planning, resource strategy, and high level project implementation in a client/server system. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $48.80 per hour salary. Must have proof of legal authority to work permanently in the United States. Please send resume to: Dennis Bailey, Director of Consulting Services, Data Performance Inc., Algonquin Road, Rolling Meadows, Illinois 60008-3106. No Calls.

• PC Specialist

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• **RESPONSIBILITIES** involve establishing training & maintaining network users, EDI directories & security in Novell 4.1 environment; installation & monitoring hardware & software programming.

• **CREDENTIALS** should include BA/BS or equivalent; 2 to 4 years experience/training; knowledge of program languages & software for Windows such as Microsoft Access, Wordperfect, Lotus 1 2 3. You must have extensive Delphi experience.

• **FOR PROMPT** consideration, mail/fax (708/681-6275) resume WITH salary expectations to: HR Dept., PEISER'S MEDICAL SUPPLIES & SERVICES, 2850 Indian Joe Drive, Broadview IL 60153 (e.o.e.)

Generally speaking, there's one place where you'll find all the elements for personal growth and professional success. American General Finance.

As one of America's largest providers of consumer lending and credit related services, American General Finance can connect you with a variety of high tech career opportunities. We're currently seeking people with diverse backgrounds and skills to join the team at our Evansville, Indiana headquarters. In general, you won't find a better environment for your success.

AS/400 Opportunities

American General Finance has a nationwide network of distributed AS/400 processors communicating with an MVS/ESA based IBM mainframe. The network includes approximately 1200 AS/400 systems. We currently have the following positions available:

Project Manager

Qualifications include a Bachelor's degree with 7-10 years related work experience. Must also be experienced with large WAN/based distributed processing systems implemented on the IBM AS/400.

Senior Systems Administrator

Qualifications include a four year degree or equivalent experience as well as a minimum of 6 years system administration experience. Extensive experience with networked systems is also required. Proficiency in at least two programming languages (CL, COBOL, C, or REXX) is preferred.

Project Analyst

Requires a college degree, 5 years of COBOL experience and 4 years design experience. AS/400 experience is strongly preferred. Knowledge of APPC/APPN is desirable.

Programmer/Analyst

Requires a college degree or equivalent with a minimum of two years of COBOL programming experience. AS/400 experience is strongly preferred.

Mainframe Programming Opportunities

Working on an IBM mainframe, our programmers provide the systems which link the company's national branch network. Our environment also includes MVS/ESA and CICS. Responsibilities will include analysis, coding and testing of new and existing application programs.

Project Analyst

Requires a Bachelor's degree or equivalent and eight years in programming and analysis in a COBOL IBM mainframe environment.

Systems Analyst

Requires a Bachelor's degree with 5 years programming and analysis experience. Also working knowledge of COBOL and Assembler languages in an MVS environment. Knowledge of retail store systems and operations is a plus.

Programmer/Analyst

Requires 3 years of programming and analysis and a working knowledge of COBOL. A Bachelor's degree or equivalent experience is also required.

Other Career Opportunities

Technical Support Analyst

Responsible for facilitating automation of testing by using automated testing tools on midrange systems applications and mainframe systems applications to improve effectiveness of testing. Will also create, recommend purchases, implement, administer and train all personnel in ISS and provide technical support to Acceptance Test.

Requires a four-year degree or equivalent experience with 8 years programming experience. AS/400 CL coding and 3270 and 5250 terminal emulation experience are also required. Must have experience with developing, installing and maintaining of automated testing tools.

Programmer/Analyst

Will produce C and C++ programs written to run under DOS, Windows, and Windows NT in support of retail systems.

Requires a Bachelor's degree or equivalent with two years of C or C++ programming in a PC DOS environment. MS Windows, Windows NT preferred.

Associate Director, Information Center

Will be responsible for planning, directing, and coordinating all activities involving LAN, Workstation, and Quality Assurance Support. In addition, you will develop the decision support and data administration functions.

Requires a BS degree in Computer Science or other related program or equivalent experience, five to ten years of total data processing experience, must have two years of management experience and knowledge of all Information Center functions and objectives.

Data Communications Systems Programmer

Responsibilities include the daily support of a VSAT based SNA network which provides processing paths for over 1200 AS/400 systems communicating with a 9121-732 CPU. Will also participate in the design and implementation of networking solutions which will provide communication links to outside vendors and business partners.

Requires a college degree or equivalent and five years experience in a mainframe based communications environment. Also knowledge of communications protocols and architectures and experience in the installation and use of communication software (VTAM, NCP, NETVIEW). Familiarity with data transfer software such as NETVIEW DM and CONNECT: DIRECT are also required.

CTI Applications Analyst

Will analyze Computer/Telephony Integration (CTI) applications, proposed projects and design and recommend CTI solutions to business needs requiring CTI applications. You will also prepare specification for implementation plans for CTI and coordinate installation of computer and telephone hardware and software.

Requirements include a college degree or equivalent and four years experience in telecommunication and computer support. You should also have good working knowledge of voice and data technology including PBX's, AS/400s, PCs and LANs.

Electronic Commerce Specialist

Will be responsible for the design and support of American General Finance's entrance to the field of Electronic Commerce. This includes heavy involvement in the area of electronic information exchange (e.g. electronic data interchange, internet/intranet) and will be responsible for overseeing and administering the implementation of electronic mail (cc:Mail) and Lotus Notes and its associated applications.

Requires a four year degree or equivalent with three years of PC/LAN based programming experience and four years analysis experience. Creativity in designing and implementing solutions to business problems are also required.

Senior Computer Operator

Will handle the daily functions of a large MVS mainframe system supporting 1200+ distributed AS/400 network. Responsibilities include ensuring maximum system availability, successfully completing day-to-day system processing and problem determination/resolution.

Requires one year of college and a minimum of three years data processing experience. Must be competent in all phases of the MVS/ESA operating system, JCL, job scheduling and able to make decisions on priorities. Experience in console automation, REXX programming, performance monitoring, storage management and/or disaster recovery is a plus.

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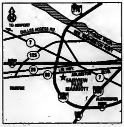

A Full Schedule of Contemporary Topics

7:30am	**Continental Breakfast & Conference Registration**
	Concurrent Sessions: **How to Pick the Right People** Dr. William Swan, President, Swan Consulting **Soft Skills and the "Invisible Assembly Line"** Tony Barrile, President, Barrile & Associates **How the Techno MBA Fits into the Business Solution** Joan B. Craig, Director, Placement & Career Svcs., U. of Pittsburgh
	Proactive Recruitment Techniques Dave Drugman, President, Bay Cities Research, Inc.
12:15pm	**Luncheon Keynote: Industry Trends** Maryfran Johnson, Executive Editor, Computerworld
	Repeat of Concurrent Sessions
	Town Hall Forum Gary Cluff, President, Cluff and Associates
6:00pm	**Program ends**

Selected sessions include:

Proactive Recruitment Techniques

Dave Drugman, President, Bay Cities Research, Inc.

To remain competitive, today's technical recruiters need to be aware of the latest trends in sourcing and proactive recruiting. This in-depth session from a leading expert will explore this critical topic and will help you put your resources and expectations into proper perspective.

Industry Trends
Luncheon/Keynote Address

Maryfran Johnson, Executive Editor, Computerworld

Sure, there are new skills entering the market every day, but what are the trends that drive these skills? Maryfran Johnson, one of the industry's leading watchers of the Information Systems profession will give you an up-to-the-minute view in this very special keynote address.

Town Hall Forum

Gary Cluff, President, Cluff and Associates

In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity as Gary Cluff, an expert in the HR field, leads us through this modern discussion of your recruiting topics.

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FourGen Software is a leading provider of high-volume integrated enterprise distribution software designed to help its clients win and keep customers and key suppliers profitably.

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INFORMIX 4GL/CASE Consultants

Minimum of 2 years INFORMIX-4GL and/or Informix CASE programming experience in a UNIX environment required. Distribution and/or Financial application experience highly desirable. Data conversion, Informix tuning, and UNIX systems administration experience helpful. (Ref#: PSG 4GL)

Distribution Financial Application Consultants

Minimum of 3 years business experience in either Distribution or Finance. Minimum of 2 years MIS experience, including managing the implementation of Distribution and/or Financial applications. Project management, business process re-design, system design specification, and systems training experience required. Relational database, client/server development, and UNIX experience highly desirable. (Ref#: PSG DF)

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FourGen is also seeking motivated technical staff to participate in designing the next generation of the FourGen applications. OO, BPR, workflow exp. a plus; training provided. All developers are located in Seattle.

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- Exp. UNIX/PC networks

Purchase Order Analysts (Ref#: PA701S)
- Exp. computerized purchasing systems

Order Management Analysts (Ref#: OMA701S)
- Exp. computerized order fulfillment systems

Warehousing/Inventory Management Analysts (Ref#: IMA701S)
- Exp. in computerized warehousing environments

FourGen Software, an equal opportunity employer, is headquartered in Seattle, Washington.

Send resumes indicating salary requirements and location preferences to:

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Demonstrated leadership experience of multiple IT teams, ideally in the mutual fund or related industry; previous technical experience across multiple platforms — MVS, mid-range, client/server; knowledge of current technological trends in IT, and their applicability to meeting the needs of the business; experience in assisting the further development of the technical strategy and direction of a company. A minimum of ten years experience in IT, with at least five years of management experience.

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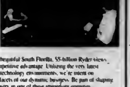

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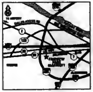

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Errors haunt tape backup

By Steve Alexander

LAN TAPE BACKUP CONTINUES TO BE A WHOPPING ADMINISTRATIVE HEADACHE FOR MOST INFORMATION SYSTEMS MANAGERS, WHO FIND THAT RETRIEVAL OF LOST DATA CAN BE TIME-CONSUMING.

"It's a huge administrative task," says Michael Peterson, an analyst at Strategic Research Corp., a network storage management market research firm in Santa Barbara, Calif. "The number of errors in the backup process averages two a week. When errors occur, you need manual intervention to solve them. Tapes have to be changed daily, labeled and rotated. And somebody must manage the media."

Rob Enderle, a senior industry analyst at Giga Information Group in Santa Clara, Calif., defines the LAN tape storage market as including any LAN server that is backed up to tape. The server is usually backed up to a local tape drive, although some servers are backed up to centralized tape libraries or servers. Major players in the LAN tape drive market include Hewlett-Packard Co., Storage Technology Corp., Seagate Technology, Inc. and Exabyte Corp.

Ed Graef found out what a big administrative task LAN tape backup can be.

"The speed of backup is largely transparent to users when the system is backed up," says Graef, IS manager at Colorado Medtech Corp., a medical devices firm in Boulder, Colo., that does contract manufacturing and research and development. "But when something has to be restored, then the clock starts, and they've got to have it right now."

The problem is that tape backup doesn't always permit file restoration. For example, Graef's 150-employee firm favors a traditional backup scenario: Using three tape drives from Boulder-based Exabyte, IS performs incremental daily backups of only those files that have changed and does a full system backup weekly.

"[Good] performance has [come to be viewed as] the speed of data recovery."

– Rob Enderle, analyst

"But when someone comes to me and wants a file restored, he or she often isn't sure when the file was last changed," Graef says. "That increases the amount of time it takes to restore the file because we must first look for the file backup on the most recent tape. And if it's not there because the file didn't change that day, we have to go back to the previous tape."

Graef backs up about 10G bytes of data nightly over a period of two to three hours. In addition to transferring data to tape, the IS staff spends about three hours per week switching tapes and restoring lost files for users. About once a month, tapes are moved off-site for disaster recovery backup.

"Errors in the backup process average two a week."

– Michael Peterson, analyst

The emphasis on speed of recovery, which adds to Graef's administrative workload, has developed as tape backup has matured, Enderle says. "Good performance originally was viewed as the speed of backup. But as companies have become more familiar with what they're trying to do, performance has become the speed of data recovery," he says.

This emphasis on recovery efficiency puts pressure on IS managers, Peterson says. "If you ask network administrators what is the biggest problem of managing storage, tape backup is always the No. 1 or No. 2 problem. And the backup problem falls into two camps: People who have large databases have a difficult time getting good backups in the time window they have available. And people who pay a lot of attention to backup suffer the ongoing grief of high labor costs. Administering the backup process in a large distributed network can cost $30,000 to $50,000 a year in labor cost." ■

Alexander is a freelance writer in Edina, Minn.

Help is on the way

To cope with the administrative burden of tape backup, analysts say, the industry is shifting to new techniques and products, including the following:

- **Image backup, in which disks are copied at the block level rather than the file level. This is expected to make backup five to 10 times faster.**
- **Autochanger tape drives, which automatically change tapes from one day to the next without human intervention and thus cut labor costs. They are available today but cost about twice as much as conventional drives.**
- **File mirroring of servers to a central disk drive, which is then backed up to tape. This is expected to reduce the number of tape drives needed in a distributed network. Today, tape drives typically are attached to many individual servers throughout the network.**

But bandwidth limitations on the LAN restrict centralized backup. As a result, tape drive industry sales aren't expected to slow until after the turn of the century.

"The product life cycle of LAN tape storage will plateau in the early 2000s and begin a gradual decline," says Michael Peterson, an analyst at Strategic Research. "But it's still a nicely growing market now." — *Steve Alexander*

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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA,
Plaintiff,

-vs-

INTERNATIONAL BUSINESS MACHINES CORPORATION,
Defendant.

Civil Action No. 56-344 (AGS)

TAKE NOTICE that International Business Machines Corporation ("IBM"), defendant in this antitrust action, has filed a motion for an order terminating the final judgment entered by the United States District Court for the Southern District of New York on January 25, 1956 (the "Final Judgment"). IBM and the United States of America have consented to modify the Final Judgment to establish specific sunset periods for all provisions currently in effect, but the parties have reserved the right to withdraw their consent for at least 90 days after publication of the Notice. Prior to entry of an order modifying the Final Judgment, the Court and the parties will consider public comments. Any such comments on the proposed termination described in that Notice must be filed within 60 days following the publication of the last notice required by the Court's Order Directing Publication. The Complaint, Final Judgment and proposed modification are further described below.

The Complaint, filed on January 21, 1952, alleged that IBM had monopolized, attempted to monopolize and restrained trade in the tabulating industry, in violation of Sections 1 and 2 of the Sherman Act. The Final Judgment was entered by consent between the United States and IBM. The Final Judgment applies to IBM's conduct with respect to tabulating machines and cards, both of which IBM has not manufactured for many years, and "electronic data processing machines" ("computers"). Certain provisions of the Final Judgment have expired or no longer apply to IBM's business. However, other provisions of the Final Judgment continue to apply to IBM's computer business. On June 13, 1994, IBM filed its motion to terminate the remaining provisions of the Final Judgment.

The Court, on January 17, 1996, terminated certain sections of the Final Judgment in their entirety: (a) Sections V (b) and (c), which required IBM to offer to sell at no more than specified prices and to hold for a specified period used IBM machines that IBM acquired pursuant to trade-ins or as a credit against sums then or thereafter payable to IBM; and (b) Section VIII, which specified conditions under which IBM could engage in "service bureau business," as defined by Section II (h) of the Final Judgment. The Court also terminated all other provisions of the Final Judgment as they applied to all IBM computer products and services, except as they applied to the AS/400 and System/360 – 390 families of products and services.

On July 2, 1996, the United States and IBM entered into a stipulation whereby the parties agreed to establish sunset periods for all remaining substantive provisions of the Final Judgment – Sections IV, V, VI, VII, IX, and XV – as they apply to the AS/400 and System/360 – 390 families of products and services. Section IV fulfills the purpose of the Final Judgment in assuring to current and prospective IBM customers an opportunity to purchase machines on terms and conditions that are not substantially more advantageous to IBM than the terms and conditions for leases of the same machines and requires IBM to sell its machines at prices that have a commercially reasonable relationship to the lease charges for the same machines. Section V restricts IBM's ability to re-acquire previously sold IBM machines. Section VI requires IBM to offer to machine owners at reasonable and nondiscriminatory prices repair and maintenance service for as long as IBM provides such service, provided that the machine has not been altered or connected to another machine in such a manner that its maintenance and repair is impractical for IBM and requires IBM to offer to machine owners and to persons engaged in the business of providing repair and maintenance services, at reasonable and nondiscriminatory prices, repair and replacement parts for as long as IBM has such parts available for use in its leased machines. Section VII restrains IBM from requiring that lessees or purchasers of IBM machines disclose to IBM the uses of such machines, from requiring that purchasers of IBM machines have those machines maintained by IBM and generally from prohibiting experimentation with, alterations in or attachments to IBM machines. Section IX requires IBM to furnish to owners of IBM machines manuals, books of instructions and other documents relating to IBM machines that IBM furnishes to its own repair and maintenance employees and requires IBM to furnish to purchasers and lessees of IBM machines manuals, books of instruction and other documents that pertain to the operation and application of such machines. Finally, Section XV enjoins IBM from entering into certain agreements to allocate markets or restrain imports into the United States or exports out of the United States and from conditioning the sale or lease of certain machines upon the purchase or lease of any other machine.

The United States and IBM have agreed to modify the Final Judgment to establish specific sunset periods for all provisions currently in effect. The parties agreed to terminate Sections IV (b) (3) and (c) (7) and Section VII (d) (1) immediately upon entry of an Order by the Court. With respect to the AS/400 family of products and services, the parties have agreed to terminate: (a) Section V (a) immediately upon entry of an Order by the Court; (b) Section IV (except Section IV (c) (3) as it may apply to the provision of operating systems, an interpretation that the United States holds and with which IBM does not agree) and Section VI (a) 6 months after entry of an Order by the Court; and (c) all other provisions of the Final Judgment as they apply to the AS/400, including Section IV (c) (3) as it may apply to operating systems, on July 2, 2000. With respect to the System/360 – 390 and the remainder of the Final Judgment, the parties have agreed to terminate all remaining provisions on July 2, 2001. Thus, under the agreement between the United States and IBM, as of July 2, 2001, the Final Judgment will be terminated in its entirety.

The United States has filed with the Court a memorandum setting forth its position with respect to modifying the Final Judgment as it applies to the AS/400 and System/360 – 390. Copies of the Complaint, the Final Judgment, the Stipulation containing the parties' tentative consent, the memoranda and all other papers filed in connection with that motion are available for inspection at the Office of the Clerk of the United States District Court, Southern District of New York, United States Courthouse, 500 Pearl Street, New York, New York 10007 and at Suite 215, Antitrust Division, Department of Justice, 325 7th Street, N.W., Washington, DC 20530 (Telephone 202-514-2481). Copies of these materials may be obtained from the Antitrust Division upon request and payment of the copying fee set by the Department of Justice.

Interested persons may submit comments regarding that matter within the sixty (60) day period established by Court order. Such comments must be filed with the Office of the Clerk of the United States District Court, Southern District of New York, 500 Pearl Street, New York, New York 10007 with copies mailed at the time of filing to: (a) counsel for IBM, Peter T. Barbur, Esq., Cravath, Swaine & Moore, Worldwide Plaza, 825 Eighth Avenue, New York, N.Y. 10019 (Telephone 212-474-1058) and (b) counsel for the United States, N. Scott Sacks, Assistant Chief, Computers & Finance Section, Antitrust Division, United States Department of Justice, Suite 9500, 600 E Street, N.W., Washington, D.C. 20530 (Telephone 202-307-6132).

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Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 200 computer publications in 63 countries. Forty million people read one or more International Data Group publications each month.

THE many benefits OF going online

By Tam Harbert

Fidelity's Frank Armo: *'It's very clear that our clients want the interactivity and other attributes that the Web can provide'*

Two powerful trends — the burgeoning growth of corporate intranets and the blossoming interest in online investing — have financial management firms in a race to provide online 401(k) plans to America's corporate benefits departments.

At least two mutual fund companies, Fidelity Investment Co. and The Vanguard Group of Investment Cos., are now beta-testing online services that can be customized for each employer's plan. The services provide a general education on the principles of portfolio management and asset allocation, specific information on the employer's 401(k) program and details on the particular investment options offered through the program.

The services also will allow participants to transfer funds online in order to rebalance their portfolios. The services are private in that they link to a server based at the mutual fund company. Access is granted only to 401(k) plan participants. However, the services use the Internet as an access method and may allow participants to jump to other investment-related World Wide Web sites, including the home pages of mutual fund companies.

The idea is attractive to employers that are using corporate intranets to save administrative time and expenses in disseminating information. Employees like the convenience of being able to access their accounts and change their asset allocation from an office or a home computer.

"The Internet is a tremendous tool to transmit benefits information," says Frank Armo, vice president of electronic distribution services for the 401(k) group at Fidelity Investment in Boston. Fidelity, which is the top provider of 401(k) plans in the country, recently surveyed its customers and found that half of them had an intranet site that provided at least some benefits information.

Fidelity is now beta-testing a 401(k) service as part of its NetBenefits program, which provides retirement planning tools and other information via the Web. In addition to information and funds transfers, the service allows participants to change instructions for future contributions, Armo says.

For example, an employee may change his contribution, splitting it among four funds rather than just three. Changes made online are given a confirmation number, which is followed up by a paper confirmation in the mail.

Fidelity plans to roll out the service later this year.

Along with Fidelity funds, the NetBenefits program accommodates company stock and several non-Fidelity funds, including Franklin Templeton Group, Invesco, Janus, Neuberger & Berman, PIMCO, Strong, USAA and Warburg Pincus.

401(k) Web sites

- www.fidelitynetwork.com
- www.vanguard.com
- www.ssds.com
- www.networth.galt.com

Educational tool

Another firm venturing into online is The Vanguard Group in Valley Forge, Pa. The company has been beta-testing Participant Online, an interactive 401(k) product built on Web technology. Compaq Computer Corp. has been using the system since last fall.

The program features an extensive educational section, including an interactive modeling capability that allows investors to figure out how much to save each month to meet their long-term goals.

Another company is working on providing an online service that isn't specific to a particular mutual fund company. SSDS, Inc., a 10-year-old network integrator in Englewood, Colo., stumbled upon the idea of providing a turnkey service when it changed its own 401(k) program last fall.

"We realized that this would be a wonderful application for a Web service," says Jerry Smith, 401(k) program manager at WebVestment Corp., a subsidiary SSDS created specifically for the service, called 401ko.

The company is prototyping the program internally. It is also talking with investment firms about offering a turnkey service whereby the financial company would "private-label" the program as its own. SSDS would then tailor the program to fit the needs of the investment firm's customers.

The company plana to have something in operation by the end of the year.

A differentiating feature of the 401(k) program is that it walks the user through a 20-question form to create a risk profile, which gets scored immediately, Smith says. Then it shows which funds match the user's particular risk profile.

Another avenue for online 401(k) programs is NETworth, a Web site that provides a wealth of information on mutual funds. The site's operator, Galt Technologies, Inc., is reportedly working on specific plans to allow investors to transfer 401(k) holdings between funds.

Galt is in the process of being acquired by Intuit, Inc. David Krimm, director of marketing for investment services at Intuit, has said the company is looking into the 401(k) services it can offer on NETworth.

The Week in Stocks

Gainers / Losers

PERCENT

Gainers		Losers	
Retix	23.1	Comshare Inc.(L)	-26.0
Micrel Semiconductor Inc.	22.0	Egghead Discount Software	-24.0
Gupta	20.6	Business Objects	-18.7
Wall Data Inc.	19.0	Lycos Inc.(L)	-17.0
Platinum Software	17.5	Radius Inc.	-16.7
Standard Microsystems Corp.(L)	16.3	Cayenne Software Inc.	-12.8
Adaptec Inc.	15.9	Logic Works	-12.2
VLSI Technology	15.9	Intelligent Info. Systems	-11.8

DOLLAR

Gainers		Losers	
Adaptec Inc.	6.25	Comshare Inc.(L)	-6.63
UUNET Tech.	5.75	Business Objects	-4.50
CompUSA Inc.	5.63	Policy Management Sys.(L)	-3.88
IBM	4.50	Cabletron Systems	-3.75
Computer Associates	4.00	Security Dynamics Tech.	-3.75
Wall Data Inc.	4.00	Arbor Software	-3.31
America On-Line	3.75	Applix Inc.	-3.00
SynOpsys	3.50	Analysts Int'l	-2.75

Industry Almanac

Chips are down for Cyrix

Building a good product doesn't necessarily lead to success in a market, particularly when that market is dominated by an industry giant.

Few companies know this better than **Cyrix Corp. (Nasdaq: CYRX)**. The microprocessor developer in Richardson, Texas, has attempted to take on **Intel Corp. (Nasdaq:INTC)** with its 6x86 line of microprocessors.

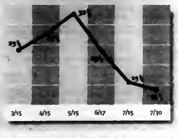
The chips run faster than comparable Intel chips — with the exception of the Pentium Pro — according to several independent benchmark tests. And they are priced slightly lower.

Unfortunately, "while the products are good, they aren't good enough," says Drew Peck, an analyst at Cowen & Co. in Boston. Large PC manufacturers won't risk using the Cyrix chips and "incurring the wrath of Intel." Because Intel dominates the microprocessor industry with at least an 85% market share, it can use "subtle and not-so-subtle measures to lock in customers" and lock out competitors, Peck says. He has a neutral rating on Cyrix stock.

Analysts see more problems looming for Cyrix. The firm last year signed a manufacturing deal with IBM. Now it is overloaded with chips that few people are buying. What's worse, the agreement calls for Cyrix to buy another 1.4 million units from IBM by the end of December. The resulting excess inventory and cash squeeze spells bleak times ahead for Cyrix, says David Wu, an analyst at The Chicago Corp. in New York. Wu says he will be "very surprised" if Cyrix is still an independent company in 1998. — *Stewart Deck*

Chips and dips

Cyrix's recent stock price has reflected the company's tough times



Exch	52-Week Range			Aug. 1 Close	Wk Net Change	Wk Pct Change
COMS	53.63	33.50	3Com Corp	41.38	2.13	5.4
AIT	60.88	47.25	Ameritech Corp	38.88	2.00	3.6
AXE	22.13	12.63	Anixter Intl.	13.50	0.38	2.9
APTS	12.13	2.75	Apertus Tech	3.38	0.25	8.0
T	68.88	49.25	AT&T	52.88	1.13	2.2
ASND	71.25	15.25	Ascend Communications	50.00	0.75	1.5
BNYN	13.63	6.00	Banyan Systems Inc.	6.25	-0.63	-9.3
BAY	50.00	20.25	Bay Networks Inc	23.50	-0.63	-2.6
BEL	60.38	43.50	Bell Atlantic Corp	60.75	2.38	4.1
BLS	45.88	37.63	BellSouth Corp.	41.75	0.38	0.9
BRKT	32.75	6.88	Brooktrout Technology	17.00	1.00	5.6
CS	87.75	48.63	Cabletron Systems	57.38	-3.75	-6.1
CSCC	74.75	14.00	Cascade Communications	64.75	-0.25	-0.4
CGRM	25.13	12.25	Centigram Communications	13.50	0.38	2.9
CSCO	59.13	25.63	Cisco Systems Inc	53.75	3.00	5.9
CLIX	9.25	4.38	Compression Labs Inc.	6.38	-0.19	-2.8
CMNT	12.75	4.00	Computer Network Tech.	6.13	0.69	12.6
XCOM	14.50	8.00	CrossComm (L)	8.44	0.00	0.0
DIGI	66.00	21.88	DSC Communications	30.50	-0.19	-0.6
FORE	44.75	13.38	FORE Systems Inc	26.25	-0.50	-1.7
GDC	21.88	9.13	General Datacomm Inds	10.63	-0.25	-2.3
GSX	40.13	38.00	General Signal Networks	39.13	0.50	1.3
GTE	49.25	33.13	GTE Corp	42.00	0.88	2.1
LU	38.25	29.75	Lucent Tech	37.00	1.50	4.2
MCIC	31.13	22.38	MCI Communications Corp	25.38	2.25	9.7
MNPI	14.50	5.50	Microcom Inc	7.50	0.88	13.2
NETM	56.00	7.63	NetManage Inc.	9.50	0.25	2.7
NTRX	10.88	3.63	Netrix Corp	7.00	-0.25	-3.4
NCDI	12.00	2.88	Network Computing Devices	3.81	-0.06	-1.6
NWK	47.00	11.50	Network Equipment Tech	13.25	-0.38	-2.8
NETG	27.63	15.00	Network General	17.75	-1.56	-8.1
NN	74.25	25.00	Newbridge Networks Corp	45.88	-1.25	-2.7
NT	55.88	31.38	Northern Telecom Ltd	47.63	-0.75	-1.6
NOVL	21.63	10.13	Novell Inc	10.88	-0.25	-2.2
NYN	59.25	40.13	Nynex Corp	45.88	1.38	3.1
OCTL	26.25	12.63	Octel Communications Corp	24.25	0.63	2.6
OOSI	43.25	16.50	Optical Data Systems Inc.	21.13	1.38	7.0
PAC	35.25	25.88	Pacific Telesis	34.50	0.75	2.2
PCTL	44.75	20.75	PictureTel Corp	35.00	-0.38	-1.1
PTON	10.25	2.38	Proteon Inc.	2.75	-0.13	-4.3
RACO	7.63	3.88	Racotek Inc.	4.38	0.25	6.3
RETX	10.88	3.81	Retix	6.00	1.13	23.1
SBC	60.25	44.25	SBC Communications	49.88	0.88	1.8
SFA	22.38	11.38	Scientific Atlanta Inc.	13.38	0.13	0.9
SHVA	87.25	50.25	Shiva Corp	54.50	0.75	1.4
FON	45.38	30.25	Sprint Corp	37.13	2.00	5.7
SMSC	23.38	10.25	Standard Microsystems Corp (L)	12.63	1.75	16.3
TBIT	13.88	2.38	Telebit Corp	12.00	0.13	1.0
USRX	105.38	32.00	US Robotics	58.75	1.75	3.2
USW	48.38	28.38	US West Inc.	30.88	0.38	1.2
XIRC	17.38	8.88	Xircom	13.13	1.00	8.2
XYLN	76.00	34.00	Xylan Corp	42.00	-2.00	-4.1
AALR	10.38	5.88	Advanced Logic Research	7.50	-0.25	-3.2
AAPL	40.75	16.00	Apple Computer Inc	21.25	-0.50	-2.3
ASTA	15.88	4.38	AST Research Inc.	4.88	-0.19	-3.7
CPQ	56.75	35.88	Compaq Computer Corp	55.25	2.38	4.5
DELL	57.25	23.00	Dell Computer Corp	56.88	3.38	6.3
GATE	41.50	18.00	Gateway 2000 Inc	40.75	1.25	3.2
HWP	57.75	35.00	Hewlett Packard Co	43.75	-0.38	-0.8
MUEI	30.88	8.75	Micron International Inc.	13.38	1.38	11.5
NIPNY	75.13	49.88	NEC America	52.75	0.25	0.5
SGI	44.88	20.00	Silicon Graphics	22.38	-0.88	-3.7
SUNW	67.13	22.25	Sun Microsystems Inc	56.75	2.75	5.5
AMH	13.50	6.75	Amdahl Corp	9.94	0.69	7.4
DGN	19.13	8.13	Data General Corp	10.50	0.00	0.0
DEC	76.50	30.50	Digital Equipment Corp	38.88	1.38	3.9
IBM	128.88	83.13	IBM	107.25	4.50	4.4
MDCD	50.25	6.25	Meridian Data Inc	9.25	0.38	4.2
NETF	7.50	2.75	NetFrame (L)	3.25	0.25	8.3
SQNT	25.50	10.13	Sequent Computer Sys.	11.25	-0.25	-2.2
SEQS	8.38	1.88	Sequoia Systems Inc.	2.06	-0.19	-8.3
SRA	36.13	16.63	Stratus Computer Inc. (L)	18.88	0.38	2.0
TDM	15.25	8.38	Tandem Computers Inc	10.50	-0.13	-1.2
TRCD	7.56	2.00	TriCord Systems	2.81	-0.13	-4.3
UIS	9.13	5.38	Unisys Corp	6.13	0.38	6.5
ADBE	74.25	28.50	Adobe Systems Inc.	30.88	0.63	2.0
AMSWA	6.75	3.63	American Software Inc	4.19	0.31	8.1
APLX	42.50	8.25	Applix Inc.	23.88	-3.00	-11.2
ARSW	82.75	28.75	Arbor Software	38.25	-3.31	-8.0
ADSK	53.00	30.50	Autodesk Inc	21.75	-2.13	-8.9
BGSS	50.00	29.25	BGS Systems Inc.	41.50	-1.25	-2.9
BMCS	67.75	32.50	BMC Software Inc.	64.25	2.19	3.5
BOOL	26.75	19.25	Boole and Babbage	24.25	-0.25	1.0
BORL	21.25	6.06	Borland Int'l Inc.	7.50	0.31	4.3
BOBJY	33.50	16.88	Business Objects	19.63	-4.50	-18.7
CAYN	11.88	4.50	Cayenne Software Inc	4.69	-0.69	-12.8
CYE	27.88	14.13	Cheyenne Software Inc	18.00	1.00	5.9
COGNF	27.38	9.75	Cognos Inc.	21.13	0.63	3.0
CA	54.88	24.88	Computer Associates	52.63	4.00	8.2
CVN	15.50	5.75	Computervision Corp	7.50	0.25	3.4
CPWR	43.50	15.50	Compuware Corp (H)	43.50	3.13	7.7
CSRE	32.00	15.00	Comshare Inc. (L)	18.88	-6.63	-26.0
COSFF	19.13	8.25	Corel Corp	8.75	-0.38	-4.1
DWTI	16.25	3.25	Dataware Technologies Inc.	4.63	0.38	8.9
FILE	47.00	20.00	FileNet Corp	23.25	2.75	13.1
DDDDF	8.25	3.56	4th Dimension	5.25	0.13	2.6
FTPS	40.63	5.88	FTP Software Inc	7.75	0.88	12.7
GSOF	23.00	7.00	Group 1 Software	9.00	-1.00	-10.0
GPTA	10.50	3.38	Gupta	5.13	0.88	20.6
HUM	28.88	15.00	Hummingbird Comm. Ltd.	16.25	-0.50	-3.0
HYSW	28.38	9.75	Hyperion Software Corp	12.13	-0.38	-3.0
IRIC	16.25	10.00	Information Resources	13.00	1.25	10.6
IFMX	38.75	16.88	Informix Corp.	23.13	1.13	5.1
INGR	20.13	9.25	Intergraph Corp	10.50	0.38	3.7
LEAF	12.63	3.63	Interleaf Inc	4.75	0.13	2.7
ISLI	25.38	8.38	Intersolv Inc.	8.75	-0.25	-2.8
INTU	89.25	31.75	Intuit Inc.	35.44	-2.44	-6.4
LGWX	22.25	9.63	Logic Works	9.88	-1.38	-12.2
MAPS	26.38	7.50	MapInfo Corp	11.25	1.38	13.9
MATH	9.25	4.63	MathSoft	6.38	-0.13	-1.9
MCAF	55.25	14.63	McAfee Associates	52.25	1.25	2.5
MENT	22.00	10.88	Mentor Graphics	12.69	-0.06	-0.5
MFGY	21.25	8.25	Micro Focus	11.13	-0.25	-2.2
MGXI	18.63	8.75	Micrografx Inc	11.50	0.50	4.5
MSFT	125.88	79.88	Microsoft Corp	120.63	1.63	1.4
ORCL	40.38	23.38	Oracle Corp	39.25	1.00	2.6
PMTC	49.50	25.38	Parametric Technology	43.63	2.25	5.4
PARQ	14.63	4.38	ParcPlace Systems Inc	4.69	0.06	1.4
PSFT	73.38	32.25	PeopleSoft	71.00	0.88	1.2
PTEC	50.38	9.88	Phoenix Technologies	16.75	1.13	7.2
PSQL	16.25	3.13	Platinum Software	8.38	1.25	17.5

Exch	52-Week Range			Aug. 1 Close	Wk Net Change	Wk Pct Change
PLAT	26.00	9.25	Platinum Technology	10.25	0.25	2.5
PRGS	38.00	13.00	Progress Software Corp. (L)	13.25	0.25	1.9
RNBO	25.38	14.63	Rainbow Technologies Inc	17.88	0.50	2.9
REDB	61.00	18.75	Red Brick Systems Inc.	24.75	0.00	0.0
ROSS	8.13	2.19	Ross Systems	4.38	0.25	5.9
SCOC	12.13	5.50	SCO Inc	5.88	-0.25	-4.1
SDTI	109.00	17.63	Security Dynamics Tech.	61.25	-3.75	-5.8
SKEY	51.75	13.38	SoftKey International Inc.	19.50	1.38	7.6
SPCO	5.13	2.19	Software Publishing Corp	2.56	-0.25	-8.9
SQAX	19.75	16.00	SQA Inc.	20.00	2.25	12.7
SOTA	19.75	7.50	State of the Art	17.63	-0.75	-4.1
SSW	81.38	39.75	Sterling Software Inc.	68.25	-2.00	-2.8
SDRC	37.38	12.19	Struct. Dynamics Research	17.25	-0.75	-4.2
SYBS	39.75	15.38	Sybase Inc.	19.00	-0.13	-0.7
SYMC	33.25	8.75	Symantec Corp	9.69	0.50	5.4
SNPS	44.75	23.00	SynOpsys	38.00	3.50	9.9
SSAX	30.63	11.00	System Software Assoc	13.06	-0.81	-5.9
SYSF	36.38	6.38	SystemSoft Corp	18.25	-1.63	-8.0
TRUV	10.13	4.63	Truevision Corp	7.00	0.38	5.7
VIEW	17.50	9.63	ViewLogic Systems	13.94	-0.19	-1.3
VMRK	19.25	5.75	VMark Software Inc.	9.50	-0.50	-5.0
WALG	12.75	8.13	Walker Interactive Systems	11.13	0.50	4.7
WALL	25.00	13.00	Wall Data Inc.	25.00	4.00	19.0
WANG	26.13	14.50	Wang Laboratories Inc.	18.38	0.81	4.6
AMER	71.00	24.50	America On Line	33.38	3.75	12.7
BBN	46.75	15.63	BBN Corp	19.50	1.38	7.6
CSRV	39.50	10.75	CompuServe Corp	12.88	0.00	0.0
LCOS	29.25	5.81	Lycos Inc. (L)	5.81	-1.19	-17.0
NETC	91.00	16.00	Netcom On Line (L)	19.38	1.13	6.2
NSCP	87.00	22.00	Netscape Comm. Corp	43.13	-0.38	-0.9
PSIX	19.00	6.75	PSINet	9.88	0.75	8.2
QDEK	38.50	5.63	Quarterdeck Corp. (L)	6.50	-0.13	-1.9
RAPT	38.75	16.63	Raptor Systems	19.25	0.00	0.0
SCUR	64.50	13.50	Secure Computing Corp. (L)	15.00	-0.75	-4.8
SPYG	61.00	12.00	Spyglass Inc	15.38	-0.63	-3.9
UUNT	88.75	24.75	UUNET Tech.	38.75	5.75	10.8
YHOO	43.00	15.50	Yahoo! Inc.	19.00	2.38	14.3
AMD	36.00	10.25	Advanced Micro Devices	12.38	0.88	7.6
ADI	30.13	17.00	Analog Devices Inc.	21.65	1.25	6.1
CHPS	11.88	7.88	Chips and Technologies	10.50	-0.81	-8.4
CRUS	61.13	12.63	Cirrus Logic	14.00	-0.63	-4.3
CY	27.75	9.13	Cypress Semiconductor Corp.	11.38	1.00	9.6
CYRX	49.75	12.50	Cyrix	13.75	-0.38	-2.7
INTC	77.75	49.81	Intel Corp	77.00	3.00	4.1
LSI	62.50	17.00	LSI Logic Corp	19.13	-0.88	-4.4
LSCC	42.38	19.75	Lattice Semiconductor	27.13	2.25	9.0
MCRL	32.38	12.00	Micrel Semiconductor Inc	19.00	3.25	22.0
MU	94.75	16.63	Micron Technology	19.25	0.00	0.0
MOT	82.50	44.75	Motorola Inc.	54.38	-0.25	-0.5
NSM	33.63	13.00	National Semiconductor	14.50	0.38	2.7
TXN	63.75	38.50	Texas Instruments	43.13	1.38	3.1
VLSI	39.13	10.38	VLSI Technology	13.75	1.88	15.9
WDC	30.13	14.38	Western Digital Corp	30.13	2.63	9.5
XLNX	51.38	23.75	Xilinx	34.25	3.00	9.6
ZLG	48.00	20.00	Zilog Inc.	23.88	0.63	2.7
APCC	18.88	7.88	American Power Conversion	12.13	0.13	1.0
ADPT	61.50	35.00	Adaptec Inc	45.38	6.25	15.9
CBEX	13.13	4.00	Cambex Corp	4.13	-0.13	-2.9
CGN	7.25	3.38	Cognitronics Corp	3.50	-0.19	-5.0
CREAF	14.13	4.75	Creative Technology Ltd.	4.38	0.06	1.4
RACE	32.00	3.63	Data Race Inc	5.69	0.13	2.3
DTM	9.38	4.13	Dataram Corp	6.13	-0.13	-2.1
EMC	23.38	13.00	EMC Corp	20.13	0.75	3.9
EMLX	27.63	6.38	Emulex Corp	15.00	1.88	14.3
ESCC	38.00	16.00	Evans and Sutherland	20.38	-1.25	-5.8
EXBT	22.75	10.00	Exabyte	12.81	0.81	6.9
IISLF	4.13	1.00	Intelligent Info. Systems	1.88	-0.25	-11.8
IOMG	55.13	2.75	Iomega Corp	17.25	-0.88	-4.8
IPLS	8.25	1.88	IPL Systems Inc.	2.38	0.25	11.1
KMAG	37.50	17.63	Komag Inc.	20.75	-0.75	-3.5
MTSI	26.38	11.25	MicroTouch Systems Inc.	15.75	-0.75	-4.5
PEAK	34.75	17.25	Peak Technology Group	23.75	1.00	4.4
PNCL	39.75	4.88	Pinnacle Micro Inc.	6.25	0.50	8.7
PTNX	22.63	9.13	Printronix Inc	13.25	1.25	10.4
AQM	6.75	3.75	QMS Inc.	5.00	0.13	2.6
QNTM	28.50	10.88	Quantum Corp	12.38	-0.38	-2.9
RDUSC	9.88	0.94	Radius Inc	1.72	-0.34	-16.7
SEG	67.75	30.13	Seagate Technology	50.88	1.63	3.4
STK	44.13	21.75	Storage Technology	36.00	2.75	8.3
STLC	8.75	1.25	StreamLogic Corp	2.25	-0.06	-2.7
TEK	61.88	29.75	Tektronix Inc.	38.38	-1.63	-4.1
XRX	54.75	38.88	Xerox Corp	52.50	2.50	5.0
AMSY	33.38	15.38	American Mgmt. Systems	25.88	-0.63	2.6
ANLY	43.75	26.00	Analysts Int'l	35.25	-2.75	-7.2
AUD	63.38	31.75	Auto Data Processing	40.63	1.88	4.8
CATP	30.75	10.38	Cambridge Tech. Partners	26.00	1.00	4.0
CEN	54.88	38.63	Ceridian Corp	45.38	-0.13	-0.3
CDO	38.63	18.88	Comdisco Inc.	24.50	0.75	3.2
CHRZ	54.00	11.63	Computer Horizons	20.25	0.25	1.3
CSC	80.75	55.50	Computer Sciences	68.13	1.50	2.3
TSK	31.88	13.25	Computer Task Group	27.75	-0.63	-2.3
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REY	54.38	30.13	Reynolds and Reynolds	49.75	2.38	5.0
SCBI	50.38	14.44	SCB Computer Tech. Inc	16.75	0.00	0.0
SEIC	26.38	17.75	SEI Corp	20.00	0.88	4.6
SMED	72.13	35.63	Shared Medical Systems	57.00	-0.38	-0.7
SSPE	26.00	17.00	Software Spectrum Inc.	23.38	1.25	5.6
SNDT	65.00	25.25	SunGard Data Systems	39.75	-0.38	-0.9

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ABC ABP

Extracting information from the intranet

Charles Babcock

WebCharts is a humble name for something that should be part of your future intranet.

It's one of the first data-visualization tools for end users that already knows that browsers and the Internet exist. It's written in Java and, in response to browser-based queries, can retrieve data from Oracle, Sybase or Informix databases.

New perspective

We are well-practiced at linking clients to distant World Wide Web sites and letting users browse through their contents. But once at a server, a user is limited in what he or she can actually retrieve.

It's extremely difficult for a user to construct his own view of data from the database. And if the user would like the view to be interactive and in real time, good luck. That's where WebCharts comes in as an early Java application.

WebCharts can be used from inside Netscape Navigator or Microsoft Explorer to build three-dimensional charts from relational database tables. If you have a sales problem buried in a row of quarterly data, you can build 3-D columns and use Virtual Reality Modeling Language to zoom past the suspect spot. In a two-dimensional chart, the problem would remain hidden.

The Meta View

The purpose of an intranet is to provide end users with information, regardless of where it resides.

WebCharts will shuffle the data on command and bring the Top 10 performers to the fore or shift data from the back to the front.

With the movement of the cursor around a symbol, the chart rotates, giving the viewer a 360-degree view. If a view captures real business information, WebCharts has already automatically downloaded a version of itself to the client so the information can be moved and displayed there. WebCharts is made by InfoSpace, Inc., a San Mateo, Calif., start-up. The company is about to release a supplementary product, WebSQL Browser.

The WebSQL Browser will reside on a server and maintain a directory of databases, wherever they reside on your network.

The purpose of an intranet is to provide users with information, regardless of where it resides. With your existing network, it's hard for a user to cross platforms to find data or to retrieve data once it's found unless a familiar access method is available. And once retrieved, it's still hard to recast data as business information.

The intranet is going to change all that as it implements the browser/server model of the Internet. If a user gets to a data-rich site through the browser, WebCharts will retrieve data and put it in useful form on the client.

The server version costs $3,000, or $10 per user. It can keep the charts and database updated in real time with the $7,000 Real-Time Data Server. These aren't shrink-wrap PC prices, but your WebCharts server could yield some profitable information.

An evaluation copy is available at www.infospace-inc.com.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Cairo detoured

CONTINUED FROM PAGE 1

said he had been briefed by Microsoft, the company plans to start promoting annuity programs for many of its products.

At the analysts' meeting, Steve Ballmer, Microsoft's executive vice president of sales and support, said the company will put special emphasis on selling annuity upgrades for Office 97.

But in the meantime, the detour on Cairo puzzles many because Cairo was promoted from the beginning as "the next major version of NT" — period. Formally announced in 1994, it was originally slated to ship in the first half of last year. The company pushed back the release date twice and abandoned the product's key feature, an object-oriented file system, in favor of a directory based on the Microsoft Exchange server.

Half a year later, it appears Microsoft may have given up the struggle to ship a singular product that encompasses Cairo's promised feature set. Several analysts, including Berst, said Microsoft announced in February it would incorporate Cairo features into NT 4.0, which was released to manufacturing last week. But the company hadn't previously said Cairo wouldn't be a product.

At last week's public forum, Jonathan Roberts, Microsoft's product manager for Windows NT, said, "Cairo is not really a product. It's a series of technologies being used over time. We probably haven't been as clear about that as we could have been."

Paul Maritz, Microsoft's group vice president of platforms, echoed Roberts' statement. "Cairo is a collection of technologies, some of which will ship in NT 4.0," he said.

"If you go back far enough in time, Cairo was intended to be a product," Gates acknowledged. "The indexing capability and [distributed common object model] in NT 4.0 are part of Cairo code. We decided those were urgent, urgent things, and it was actually only a few weeks before [NT 4.0's] release that we were able to get them in."

But Gates denied that Microsoft has abandoned Cairo as a product. The product has been divided between Microsoft NT versions 4.0 and 5.0, he said. "[Microsoft Vice President] Jim Allchin was hired to deliver the Cairo vision," he said. "That vision is being delivered in two vehicles. The day we ship NT 5.0, we'll be able to say the Cairo vision is here." Microsoft officials didn't specify which Cairo components are slated for Windows NT 5.0.

Common bond

Microsoft said Windows 95 and Windows NT will soon share a common driver model, which will let the operating systems use the same drivers to interface with hardware products. The drivers will make it easier to deploy Windows NT and Windows 95 clients on the same network.

Out of focus

Analysts at the meeting said the Cairo vision is fuzzy.

"I think Cairo has lost its definition," said Rick Sherlund, an analyst at Goldman, Sachs & Co. in New York. Sherlund said Cairo is now the code name for Windows NT 5.0. He said he is no longer certain which features it includes.

Despite uncertainty about Cairo's future, users said a gradual rollout of the product has benefits.

"Cairo is the linchpin of our whole technology effort," said Carl Carrie, vice president of international software development at Tullet & Tokyo Forex, Inc., a New York brokerage. He said releasing Cairo in sections "is very good because users want Microsoft to slow down with operating systems upgrades."

Steve Sommer, vice president of information systems at Hughes, Hubbard and Reed, a New York law firm, said a slow transition gives users time to adjust their systems. "Evolvement is a good idea," he said.

The next piece of Cairo due for release is the directory system, which Microsoft officials said will be previewed for users by year's end.

• Senior writer Tim Ouellette contributed to this report.

OLE

CONTINUED FROM PAGE 1

July 26, Microsoft has said it will do the following:

- Hand off control and future development of its ActiveX object architecture to an independent organization. But that organization thus far has no name and no members.
- Provide development tools for building ActiveX components on Unix platforms, including Sun Microsystems, Inc.'s Solaris, but without solving the need for special platform-specific versions of ActiveX components.
- Work with more than 100 other vendors to decide the future of ActiveX and the OLE technology that ActiveX depends on. But even setting up a meeting with vendors to discuss those plans has Microsoft scrambling.

Positive message

Even so, the announcements were good news to some users. "I hear a clear statement that Microsoft is committed to being open and cross-platform," said Gary Frederick, who evaluates object technology at LDDS WorldCom in Tulsa, Okla.

That is certainly the message Microsoft hoped to send following heavy criticism that ActiveX, OLE and its forthcoming Distributed Component Object Model are proprietary and can be used only on Microsoft's Windows and Windows NT operating systems.

But other users expressed suspicion of Microsoft's motives. "I'm always wary of them," said Timothy M. Tully, vice president of architecture and technology at T. Rowe Price and Associates in Baltimore. "These guys are not as interested in open architectures as they make themselves out to be."

Object standards

Many large organizations have made major investments in the Object Management Group's Common Object Request Broker Architecture, the Open Group's Distributed Computing Environment and other ways of linking users' desktops with client/server and legacy applications.

For such users, it is crucial that ActiveX truly interoperates with existing infrastructures, said Aron Dutta, a principal at Booz Allen & Hamilton, Inc. in New York.

But Microsoft has dragged its feet in turning over information for linking forthcoming versions of its products to systems such as CORBA, said Chris Stone, president of the Object Management Group. Microsoft denied any such delays.

Users are also concerned about how quickly ActiveX will be developed in the future. "Microsoft can make mountains move in a short period of time," Tully said. "With an independent party, it could be much slower."

& **Meanwhile, ODBC** coding gets easier. See page 43.

altcw

The first e-word was e-mail. Then others came along: Apple's online service was eWorld, and United Airlines will sell you an E-ticket. The world is going to burn a lot of energy inventing e-words. But there are already lots of them in the dictionary:

e-gret The official bird of the Internet.

e pluribus unum The U.S. after everyone is connected to an electronic town hall.

e-dict Harold gets an e-mail message from his boss: "Come in on time or don't come in at all."

e-ocene period About 70 million years before computers.

e-ocene

e-quip (1) Put a modem in your computer.

e-quation $9.95 for basic service + 14 hours online at $2.95 per hour = $51.25.

e-gotist Lucille says she's the best network administrator in the country.

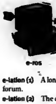
e-quality Harold e-mails Lucille repeatedly to insist he's just as good.

e-lude Lucille changes her screen name so that jerk Harold can't contact her any more.

e-quip (2) An online joke.

e-poxy The glue that holds the Internet together.

e-raser Downloaded virus that wipes out Harold's hard drive and all memory of Lucille.


e-ros

e-conomy All the money being spent online for goods and services.

e-vasion The congressman dodges a question during a pre-election chat session.

e-quivocate I'm not sure if this is a valid e-word. Maybe it is. Maybe it isn't.

e-lation (1) A long-lost cousin you discover in the genealogy forum.

e-lation (2) The cousin is Bill Gates!

e-questrienne That Lucille — she takes her laptop everywhere.

e-maciated Harold sits at his computer day and night trying to locate Lucille.

e-lapse Harold hasn't paid his online service for three months.

e-vict Harold's service throws him out via e-mail.

e-longate Cousin Bill buys Harold 10 years' worth of online service.

e-sp Harold's computer has an out-of-chip experience and locates Lucille. Harold e-mails apology.

e-ros The god of online romance, who smites Harold and Lucille.

e-lope Harold and Lucille arrange online to run away and get married.

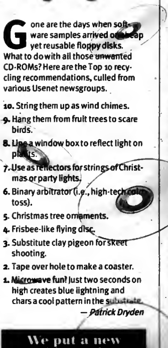
e-vent Big announcement on the Internet: the birth of Harold and Lucille's first child.

e-gress They lived happily ever after. Gotta sign off now. Bye!

— Contributed by Bernard Jacks

e-vasion

Illustrations by Matt Wawiorka



Gone are the days when software samples arrived on cheap yet reusable floppy disks. What to do with all those unwanted CD-ROMs? Here are the Top 10 recycling recommendations, culled from various Usenet newsgroups.

10. String them up as wind chimes.
9. Hang them from fruit trees to scare birds.
8. Line a window box to reflect light on plants.
7. Use as reflectors for strings of Christmas or party lights.
6. Binary arbitrator (i.e., high-tech coin toss).
5. Christmas tree ornaments.
4. Frisbee-like flying disc.
3. Substitute clay pigeon for skeet shooting.
2. Tape over hole to make a coaster.
1. Microwave fun! Just two seconds on high creates blue lightning and chars a cool pattern in the substrate.

— Patrick Dryden

Inside Lines

Dangerous demo

It's just a start-up, but network management vendor Kaspia Systems has already irritated IS officials at Arizona State University. To demonstrate upcoming tools, an "overzealous" Kaspia employee surreptitiously analyzed campus connections and posted performance reports on its Web page. Alerted to the unapproved probe, university network administrators quickly shut off the "public read" capability on its routers. They were none too pleased to see Kaspia reveal groupings and subnet configurations that could aid penetration by hackers. They also didn't want to appear to be endorsing Kaspia's products.

NetSys on Bay watch

Managers of networks built on routers from Bay Networks should get the same troubleshooting and planning capability next month that has been available for routers from Cisco Systems. Users with Bay-based or mixed networks are beta-testing a version of Enterprise/Solver — a tool that checks router configurations and tests proposed changes — from NetSys Technologies in Palo Alto, Calif.

Internet rent-a-cop

In two weeks, NetSolve plans to add Internet security to the wide-area network and systems management services provided by its network operations center in Austin, Texas. Organizations can then outsource such tasks as security assessment, firewall setup and monitoring of an intrusion detection and response system.

A fight may be brewing

In an about-face, SAP AG — which has always prided itself on being a pure software development company — will announce next week that it's getting into the R/3 implementation business. Sources close to the company say that taking control of the process is SAP's way of answering users' complaints about lengthy and costly implementations. But it puts SAP into competition with the likes of Andersen Consulting, Ernst & Young and other vendors on which SAP has traditionally relied to install its software.

Clusters rising

IBM this fall will introduce high-end Unix clustering software, code-named Phoenix, that quadruples the number of its RS/6000 servers that can be tied together. IBM supports eight-system clusters; Phoenix will handle up to 32 machines initially and then expand to 128 next year. The software will ship on IBM's RS/6000 SP parallel processor this year and should become available on general-purpose RS/6000s early next year.

Five-ring circus

Seems as if everyone is ganging up on IBM's computing gaffes at the Atlanta Olympic Games, including syndicated columnist Dave Barry. In an amusing column Barry penned last week to chide NBC for its tape-delayed coverage of the Games, Barry described IBM as "a giant corporation with vast computer expertise. That's why we're in charge of keeping track of all the statistics for these, the Olympic Games of 1953." Maybe Big Blue should consider pulling the plug on all those Olympic TV commercials it keeps running.

In this column last week, an item headlined "Olympic flame burns Candle Corp." should have clearly spelled out to readers that the Candle being referred to was actually a maker of candles — not the well-known network and systems management vendor in Santa Monica, Calif. Computerworld *regrets the error. To get in touch with us about news items or tips, call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Patricia Keefe can be reached by phone at (508) 820-8183 or via the Internet at patricia_keefe@cw.com.*

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